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## SIX-MEMBER AND TWELVE-MEMBER JURIES: AN EMPIRICAL STUDY OF TRIAL RESULTS\*

Within the past three years, at least fifty-seven federal district courts have adopted local rules reducing the size of civil juries from twelve members to six.<sup>1</sup> This striking trend follows the United States Supreme Court's ruling in *Williams v. Florida*<sup>2</sup> that the constitutional guarantee of trial by jury does not require the jury size to be fixed at twelve.<sup>3</sup> The Court approved the use of a six-member jury in that criminal case on the ground that the reduction in jury size would neither significantly affect the jury's functions nor materially change the jury's verdicts.<sup>4</sup>

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<sup>1</sup> As of January 15, 1973, fifty-seven federal district courts had reduced the size of the jury from twelve to six in some or in all civil cases, and one other had reduced the jury to eight members in certain cases. ADMINISTRATIVE OFFICE OF THE UNITED STATES COURTS, LIST OF U.S. DISTRICT COURTS THAT HAVE ADOPTED RULES REDUCING THE SIZE OF CIVIL JURIES. The list is continually updated and is available from the Administrative Office upon request. See also Fisher, *The Seventh Amendment and the Common Law: No Magic in Numbers*, 56 F.R.D. 507, 535-42 (1973) (reproducing an Administrative Office list of fifty-four courts and quoting the applicable court rules, including date of adoption, as included in the list).

<sup>2</sup> 399 U.S. 78 (1970).

<sup>3</sup> The narrow holding of *Williams* was that the sixth amendment does not prohibit the use of a six-member jury in a criminal case in state court. The application of the sixth amendment to a state court proceeding was based on *Duncan v. Louisiana*, 391 U.S. 145 (1968), in which the Court held that the fourteenth amendment incorporates the sixth amendment's jury-trial guarantee. The *Williams* Court's discussion of the historical origins and functions of the jury seems to apply, with equal validity, to the jury-trial provision of the seventh amendment. In *Williams*, however, the Court expressly reserved the question of whether the seventh amendment requires a jury of twelve in civil cases in federal courts. This term the Court is faced with deciding this latter issue in *Colgrove v. Battin*, 456 F.2d 1379 (9th Cir. 1972), cert. granted, 409 U.S. 841 (1972). It seems highly probable that the Court will approve the use of the six-member jury in civil cases in federal court; to do otherwise would be to give the seventh amendment's civil jury-trial provision a more restrictive interpretation than the sixth amendment's criminal jury-trial guarantee.

<sup>4</sup> In approving the jury-size reduction, the Court found the twelve-member jury an "historical accident, unnecessary to effect the purposes of the jury system and wholly without significance 'except to mystics.'" 399 U.S. at 102 (citing *Duncan v. Louisiana*, 391

Since the seventh amendment has never been construed to require a twelve-member jury in civil cases in state courts, some states have had experience with a jury of fewer than twelve.<sup>5</sup> In *Williams* the Supreme Court attempted to draw on this prior state experience to support its assumption that a reduction in jury size would have a negligible effect on trial results. The Court referred to empirical evidence in the following terms:

What few experiments have occurred—usually in the civil area—indicate that there is no discernible difference between the results reached by the two different-sized juries.<sup>6</sup>

The Court relied on six articles in legal periodicals to support this conclusion.<sup>7</sup> The evidence, however, is not highly persuasive. Hans Zeisel, a leading authority on American juries,<sup>8</sup> has examined the substance of these articles and found that none was based on empirical investigation.<sup>9</sup> The sources cited by the Court represent merely the personal opinions of several judges, lawyers, and court clerks possessing only limited experience with juries of fewer than twelve.<sup>10</sup> In the words of Professor Zeisel, "This is scant evidence by any standards."<sup>11</sup>

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U.S. 145, 182 (1968) (Harlan, J., dissenting) ). After determining that, in criminal cases, the purpose of a jury trial is to prevent oppression by the government, Justice White, writing for the majority, offered the following analysis:

[T]he essential feature of a jury obviously lies in the interposition between the accused and his accuser of the commonsense judgment of a group of laymen, and in the community participation and shared responsibility that results from that group's determination of guilt or innocence. The performance of this role is not a function of the particular number of the body that makes up the jury. To be sure, the number should probably be large enough to promote group deliberation, free from outside attempts at intimidation, and to provide a fair possibility for obtaining a representative cross section of the community. But we find little reason to think that these goals are in any meaningful sense less likely to be achieved when the jury numbers six, than when it numbers twelve—particularly if the requirement of unanimity is retained. And certainly the reliability of the jury as a factfinder hardly seems likely to be a function of its size.

399 U.S. at 100-01 (footnote omitted).

<sup>5</sup> See, e.g., COLO. REV. STAT. ANN. § 78-7-4 (1963); CONN. GEN. STAT. ANN. § 51-243 (1960); WASH. REV. CODE ANN. § 4.44.120 (1956).

<sup>6</sup> 399 U.S. at 101.

<sup>7</sup> 399 U.S. at 101 n.48. The six articles cited are: Wiehl, *The Six Man Jury*, 4 GONZAGA L. REV. 35, 40-41 (1968); Tamm, *The Five-Man Civil Jury: A Proposed Constitutional Amendment*, 51 GEO. L.J. 120, 134-36 (1962); Cronin, *Six-Member Juries in District Courts*, 2 BOSTON B.J. 27 (1958); *Six-Member Juries Tried in a Massachusetts District Court*, 42 J. AM. JUD. SOC'Y 138 (1968); *New Jersey Experiments with Six-Man Jury*, 9 BULL. OF THE SECTION OF JUD. AD. OF THE ABA, May, 1966, at 6; Phillips, *A Jury of Six in All Cases*, 30 CONN. B.J. 354 (1956).

<sup>8</sup> Professor Zeisel is a coauthor of the book reporting the findings of the University of Chicago Jury Project, probably the most extensive study of the American jury ever performed. See H. KALVEN & H. ZEISEL, *THE AMERICAN JURY* (1966).

<sup>9</sup> Zeisel, . . . *And Then There Were None: The Diminution of the Federal Jury*, 38 U. CHI. L. REV. 710, 713-15 (1971).

<sup>10</sup> *Id.*

<sup>11</sup> *Id.* at 715.

Although post-*Williams* commentators<sup>12</sup> generally agree that a reduction in jury size will expedite jury trials<sup>13</sup> and decrease their cost,<sup>14</sup> several writers have criticized the Court's decision and suggested that nonnegligible differences in trial results might be expected to occur. By using standard binomial sampling theory to compare the expected performance of six-member and twelve-member juries in criminal cases, one commentator has demonstrated that the six-member jury may have a higher probability of convicting the defendant in "weak" cases and a lower conviction probability in "strong" cases.<sup>15</sup> Similarly, Professor Zeisel has simulated random sampling from a stratified society to show that the six-member jury's damage awards may be subject to wider variation than the twelve-member jury's awards.<sup>16</sup> He has

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<sup>12</sup> Although the opinion in *Williams v. Florida* has received much attention in legal periodicals, many of the articles are merely repetitions of and slight variations upon several common themes. Among those articles generally supporting the trend toward six-member juries are Note, *Reducing the Size of Juries*, 5 U. MICH. J.L. REF. 87 (1971) (indicates that the twelve-member jury has contributed to high costs and extensive delay in the court system and suggests that the reduction in jury size would eliminate many problems while retaining both the deliberative quality of the jury and the jury's function as the conscience of the community); Bogue & Fritz, *The Six-Man Jury*, 17 S.D.L. REV. 710 (1971) (encourages the adoption of six-member juries in civil cases in order to increase court efficiency and obtain financial savings); Augelli, *Six-Member Juries in Civil Actions in the Federal Judicial System*, 3 SETON HALL L. REV. 281 (1972) (notes that Great Britain and most other European countries have virtually eliminated civil jury trials and hails the reduction in jury size as a positive first step toward the eventual abolition of the civil jury system); Croake, *Memorandum on the Advisability and Constitutionality of Six Man Juries and 5/6 Verdicts in Civil Cases*, 44 N.Y. ST. B.J. 385 (1972) (recommends adoption of the six-member jury in civil cases tried in United States District Court for the Southern District of New York and suggests that the requirement of jury unanimity be abandoned in favor of a mandatory five-sixths verdict). Articles critical of the *Williams* decision include Note, *The Effect of Jury Size on the Probability of Conviction: An Evaluation of Williams v. Florida*, 22 CASE W. RES. L. REV. 529 (1971) (attempts to prove that jury performance is impaired when the size is reduced using a statistical probability model to show that the six-member jury may convict different persons from those the twelve-member jury would convict); and Zeisel, *supra* note 9 (demonstrates that the *Williams* Court had no empirical data on which to base its holding and suggests that smaller juries may tend to have fewer minority group members and greater variation in verdicts). For a more extensive bibliography, see INSTITUTE OF JUDICIAL ADMINISTRATION, A COMPARISON OF SIX- AND TWELVE-MEMBER CIVIL JURIES IN NEW JERSEY SUPERIOR AND COUNTY COURTS 53-58 (1972) [hereinafter cited as IJA STUDY].

<sup>13</sup> The opinion is not unanimous, and there is still some doubt that voir dire and trial times are appreciably reduced. One author examined the amount of time expended in civil cases before and after the change from twelve-member to six-member juries in the United States District Court for the District of Columbia and found almost no difference between the voir dire and trial times for the different-sized juries. W. Pabst, *Statistical Studies of the Costs of Six-Man Versus Twelve-Man Juries*, (unpublished paper on file with the *University of Michigan Journal of Law Reform*). Furthermore, the predicted decrease in deliberation time as a result of the smaller jury has yet to be adequately documented.

<sup>14</sup> The most immediate saving is reflected in the decreased costs of juror compensation. For example, in Michigan, jurors are paid fifteen dollars per day of actual attendance at court and also receive ten cents per mile for each round trip between their residence and the court. MICH. COMP. LAWS ANN. § 600.1344 (Supp. 1972). Substantial savings can thus be realized by reducing the number of jurors required.

<sup>15</sup> Note, *The Effect of Jury Size on the Probability of Conviction: An Evaluation of Williams v. Florida*, *supra* note 12, at 545-47.

<sup>16</sup> Zeisel, *supra* note 9, at 716-18.

also predicted that where verdicts must be unanimous, fewer hung juries may be expected in six-member juries than in twelve-member juries.<sup>17</sup> These predictions of variations in trial results depending on jury size are primarily derived from manipulations of statistical probability models, which in turn are based on highly problematic assumptions concerning the composition and deliberation of juries. Because there has been no empirical verification that the probability models adequately describe the actual verdict-production process, such predictions are of limited utility.

The most convincing basis for criticism of the Supreme Court's conclusion that there is "no discernible difference" between the results reached by the six-member juries and those reached by the twelve-member juries would be empirical data suggesting a contrary conclusion. A recent study by the Institute of Judicial Administration comparing twelve-member and six-member juries in over 650 civil cases in New Jersey courts disclosed less than a two percentage-point difference between the respective percentages of verdicts rendered for plaintiffs by the two different-sized juries.<sup>18</sup> The same study seemed to indicate that the damage awards in twelve-member jury cases were higher than those in six-member jury cases.<sup>19</sup> The reliability of these findings is suspect, however, since in each case the lawyers were permitted to choose the size of the jury impaneled and there is strong evidence that lawyers requested twelve-member juries in cases in which the issues were complex or the potential damages large.<sup>20</sup>

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<sup>17</sup> *Id.* at 719.

<sup>18</sup> IJA STUDY, *supra* note 12, at 22.

<sup>19</sup> *Id.* at 23-24.

<sup>20</sup> Among the findings of the study were the following:

1. "Six-member voir dres averaged approximately 45%, or 21 minutes, shorter than twelve-member." *Id.* at 7.

2. "Deliberation time by six-member juries averaged 36 minutes, or 33%, less than time for twelve-member deliberations." *Id.* at 7.

3. "Cases tried before twelve-member juries took approximately twice as much trial time as those tried before six (11 hours' trial time compared to 5.6)." *Id.* at 7.

4. "Damage awards by twelve-member juries average almost three times larger than those by six." *Id.* at 7.

5. "[S]ettlements of cases started before twelve-member juries also average three times larger than settlements of cases started before six." *Id.* at 7.

The author of the study, however, was careful to point out that these results cannot be taken as indicating any inherent differences between the different-sized juries:

Many of the differences between trials before six- and twelve-member juries appear to be due to differences in the types of cases selected by lawyers to be tried to six- and twelve-member juries rather than to differences in the size of the jury.

*Id.* at 5. It appears that the "big" or "complicated" cases were more likely to be tried before twelve- than before six-member juries. *Id.* at 7, 23-24. The IJA Study is nevertheless an important source of data, especially as to the opinions of judges and lawyers concerning jury size and trial time.

Additional empirical data seem necessary to assess the accuracy of the statement made in *Williams*. The study discussed in this article examines the results of six-member and twelve-member jury trials and applies statistical methods to assist in drawing inferences from the data. Because empirical data are subject to many plausible interpretations, the findings of this study are suggestive rather than conclusive. This study should, however, contribute useful information to the present paucity of knowledge concerning the effects of jury size on the verdicts rendered.

## I. METHODOLOGY

### *A. Study Design*

The primary objective of this study is to determine whether there are statistically significant differences between the results of six-member and twelve-member jury trials in civil cases. The ideal design for a study of this type would be to allow both six-member and twelve-member panels to observe the same trial and to reach a verdict by deliberation. A comparison between the verdicts rendered by the two different-sized panels in a number of such trials would provide excellent evidence of any differences in results attributable to the size of the jury. Unfortunately, in an actual trial only a single jury, whatever its size, decides the case. Thus in order to use actual trial results to test the effect of jury size on the verdicts rendered it is necessary to compare verdicts arising from different trials.

The design adopted by this study is to observe a large number of jury verdicts generated by one court system during two different time periods—one period during which twelve-member juries were employed and another period during which six-member juries were employed. The verdicts from one period are compared with those from the other period in an attempt to identify any differences attributable to jury size. This study design differs from the ideal in two major respects. First, the two different-sized panels do not observe and decide the same cases. Second, other changes besides the jury size modification may have occurred between or during the two time periods under consideration. These changes may also affect the verdicts rendered.

Since potentially confounding changes in the court system cannot be controlled by the investigator, this study design is relatively weak in screening out rival explanations for any observed

differences in verdicts.<sup>21</sup> The approach adopted in this study is to identify any known changes in causes of action or court processes which could possibly affect the trial results and to attempt to account for the effects of these changes in analyzing the data. Nevertheless, it is important to realize that a variety of factors other than the change in jury size could have affected the trial results data.

### *B. Description of the Samples*

On July 23, 1970, the size of the civil jury in Michigan state courts was reduced by statute from twelve to six members.<sup>22</sup> Although the size of the jury was decreased, the statute preserved the prior provision for receipt of a verdict when five-sixths of the jurors had reached agreement.<sup>23</sup> The primary motivation for the reduction in jury size was that a six-member jury would cost less than a twelve-member jury.<sup>24</sup>

To test the effect of the jury-size reduction on verdicts rendered, data were collected from the court records of the Circuit Court of Wayne County, Michigan, a county comprised largely of the city of Detroit. The twelve-member jury sample of 193 cases includes all civil cases (except divorces) disposed of by jury trial during the six-month period from March 1, 1969, to August 31, 1969. During this period, the civil jury consisted of twelve members; verdicts were received when ten jurors reached agreement. The six-member jury sample of 292 cases includes all civil cases (except divorces) disposed of by jury trial during the six-month period from March 1, 1971, to August 31, 1971.<sup>25</sup> During this

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<sup>21</sup> See generally Lempert, *Strategies of Research Design in the Legal Impact Study*, 1 LAW & SOC'Y REV. 111, 123-25 (1966).

<sup>22</sup> P.A. 1970, No. 118, § 1, amending MICH. COMP. LAWS ANN § 600.1352 (Supp. 1972): "In civil cases, trial shall be by a jury of 6. A verdict shall be received when 5 jurors agree." Six-member juries were formerly available only "upon written request of a party and the written consent of all other parties not later than the time of pretrial conference." P.A. 1968, No. 326, § 1.

<sup>23</sup> The five-sixths requirement was previously included in both the optional six-member (P.A. 1968, No. 326, § 1) and the twelve-member (P.A. 1968, No. 326, § 1) jury provisions.

<sup>24</sup> Letter from Roger E. Craig, Oct. 25, 1972, on file with the *University of Michigan Journal of Law Reform*. In April, 1970, Mr. Craig, then a state senator, introduced in the Michigan legislature the bill to reduce the size of the civil jury. The bill was passed with little debate, apparently on the assumption that the reduction in size would not appreciably affect jury functioning. *Id.* The bill, S. Bill 1670, passed in the Senate by a vote of thirty-two to one and in the House by a vote of seventy-two to twenty. 2 MICH. SEN. J. 1178-79 (1970); 3 MICH. HOUSE J. 2850 (1970).

<sup>25</sup> Although all cases were sampled, eminent domain cases and paternity suits were routinely deleted from the "other general civil" category (see note 26 *infra*) for both six- and twelve-member juries. These two types of cases were excluded from the samples

latter period, the civil jury consisted of six members; verdicts were received when five jurors reached agreement.

The information extracted from the history of each case included: (1) the dates of all important events during the progress of the case; (2) the type of case—either automobile negligence or “other general civil,”<sup>26</sup> as categorized on filing; (3) the amount of damages sought by the plaintiff, as stated in the complaint; (4) the duration of the trial, in days; (5) the manner of trial termination—verdict, settlement, directed verdict, mistrial, or hung jury—after the jury was impaneled; (6) the prevailing party in cases in which a verdict was rendered; and (7) the amount of damages awarded in cases in which the plaintiff was the prevailing party. This information provides the basis for comparison of twelve-member and six-member jury verdicts.

Both the twelve-member jury sample and the six-member jury sample are composed of roughly 58 percent automobile negligence cases and 42 percent other general civil cases. (See Figure 1.) During the summer of 1971, as part of a program to reduce the case backlog, visiting judges were assigned to Wayne County Circuit Court. The visiting judges kept courtrooms in operation during the summer vacations of regular judges.<sup>27</sup> This backlog

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because amount sought and amount awarded data were generally unavailable from the court records.

The table below describes the exclusions from the samples.

	Mar.-Aug. 1969	Mar.-Aug. 1971
TOTAL CASES AVAILABLE	236	331
less CASES EXCLUDED:		
Eminent domain cases	10	5
Paternity suits	20	19
Trial to different-sized jury	1	5
Jury Waived	1	1
Consolidated with another case	9	1
Suppression of docket entires	0	1
Missing trial result data	2	3
CASES IN SAMPLE	193	292

The data were collected during September and October, 1972. Analysis of the data was performed by the author using computer programs supplied by the University of Michigan Statistical Research Laboratory. Data on file with the *University of Michigan Journal of Law Reform*.

<sup>26</sup> The “other general civil” category of cases includes all cases not classifiable as automobile negligence or divorce.

<sup>27</sup> SUPREME COURT OF MICHIGAN, 1971 ANNUAL REPORT pt. 1, at 13.



FIGURE 1

## DESCRIPTION OF SAMPLES

Type of Case	12-Member Jury		6-Member Jury	
	Number of Cases	Percent of Sample	Number of Cases	Percent of Sample
Automobile Negligence Cases (AN)	111	57.5%	170	58.2%
Other General Civil Cases (OGC)	82	42.5%	122	41.8%
Total Cases (TOTAL)	193	100.0%	292	100.0%

reduction program contributed additional cases to the six-member jury sample, making it about 50 percent higher than the twelve-member jury sample.

### C. Description of the Court System Studied

Before comparing the two samples, it is important to examine the court system generating the verdicts and to identify other changes in court procedure, besides the jury size modification, which might have affected the verdicts rendered. The following description of the Wayne County Circuit Court focuses on institutional changes which could have affected the trial results.<sup>28</sup>

In Wayne County, the time from the date of filing of a civil action to the date on which trial is commenced is typically two to three years.<sup>29</sup> Trials, including jury deliberations, take, on average, roughly three days in automobile negligence cases and four days in other general civil cases.<sup>30</sup> The duration of jury deliberations is seldom more than several hours.

Only approximately 3 percent of the automobile negligence and other general civil cases filed are actually decided by a jury.<sup>31</sup> About 93 percent of the civil cases filed are dismissed, dropped, settled, or otherwise disposed of during pretrial proceedings.<sup>32</sup> The remaining 4 percent of cases filed are either tried to a judge only or do not reach the jury because of directed verdicts or settlements after jury trial has begun.<sup>33</sup>

<sup>28</sup> Much of the information in this part, especially that in section 3 on trial procedures, was obtained in an interview with Jack Breckenridge and Wilfred Michael of the Wayne County Circuit Court Clerk's Office, Sept. 29, 1972.

<sup>29</sup> While there is some difficulty in isolating a "typical" case, the court data collected in this study reveal that most civil cases are tried between twenty-four and thirty-six months after filing.

<sup>30</sup> See the trial duration data, Figure 4 *infra*.

<sup>31</sup> Author's calculations based on the judicial statistics included in Table IV of the Appendices to the 1969 and 1971 annual reports of the Supreme Court of Michigan.

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

1. *Causes of Action*—During the period from March, 1969, through August, 1971, the Wayne County Circuit Court clerk classified civil cases, other than divorces, as either automobile negligence cases or other general civil cases. Since “other general civil” is a residual category including all cases not classifiable as either automobile negligence or divorce, the breakdown of types of cases encompassed within the “other general civil” label may have changed somewhat between the time of the former sample and that of the latter. The extent of this change, if any, is unknown.

Effective January 1, 1970, the jurisdiction of the Wayne County Circuit Court was contracted by an expansion of the jurisdiction of the Common Pleas Court of Detroit.<sup>34</sup> All the cases examined in this study were filed prior to January 1, 1970, but the jurisdiction change may have allowed some potential circuit court cases to be dismissed without prejudice in circuit court in order that the cases might be transferred to common pleas court.

Persistent increases in the cost of living in Wayne County may have caused a rise in the potential values, in stated dollar amounts, of the causes of action entering Wayne County Circuit Court. Between the six-month period in 1969 from which the sample of twelve-member jury verdicts was taken and the six-month period in 1971 from which the sample of six-member jury verdicts was taken, Detroit experienced a rate of inflation of about 10 percent.<sup>35</sup> This inflation should be taken into account in comparing the amounts awarded by the different-sized juries.

2. *Pretrial Proceedings*—The mounting backlog of civil cases in Wayne County has prompted several recent modifications in pretrial proceedings. In 1971, two major changes were introduced in an attempt to encourage settlements prior to trial. These were (1) the institution of a mediation board, and (2) revision of the court rules to permit discovery of insurance policy limits.<sup>36</sup>

<sup>34</sup> According to the Michigan Constitution, Article 6, Section 13, the circuit court of a county has original jurisdiction in all matters arising within the county unless prohibited by law. In Wayne County, a portion of the circuit court's plenary jurisdiction in civil matters has been assigned to the common pleas court of Detroit. Prior to January 1, 1970, the common pleas court exercised exclusive jurisdiction in civil actions arising in Detroit in which the debt or damages did not exceed \$1,000 and concurrent jurisdiction with the circuit court in civil actions arising in Detroit in which the debt or damages did not exceed \$5,000. Effective January 1, 1970, the jurisdiction of the common pleas court was expanded by raising the ceiling on its exclusive jurisdiction to \$5,000 and increasing the limit on its concurrent jurisdiction to \$10,000. MICH. COMP. LAWS ANN. § 728.1 (Supp. 1972).

<sup>35</sup> The rate of inflation was computed based on the reported consumer price indices for Detroit. U.S. DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS, CONSUMER PRICE INDEX.

<sup>36</sup> SUPREME COURT OF MICHIGAN, 1971 ANNUAL REPORT pt. 1, at 13.

The mediation board was instituted in April, 1971.<sup>37</sup> Mediation is available only in automobile negligence cases where probable liability is admitted by the defendant and the sole question for decision is the amount of the damage award.<sup>38</sup> If the parties elect to submit a case to mediation, a mediation board of three members—two attorneys and a judge—is convened and places a value on the injured party's claim.<sup>39</sup> The parties may accept the mediation board valuation and settle the case without trial. If the valuation is rejected by either party, the case proceeds to trial. A party rejecting the valuation, however, is required to pay the actual costs<sup>40</sup> of the party willing to accept the valuation if the ultimate jury verdict is not at least 10 percent more favorable to the rejecting party<sup>41</sup> than was the mediation board's valuation.

While the mediation board did not affect any potential twelve-member jury cases, 168 cases were evaluated by the mediation board during the period from which the six-member jury sample was drawn. In 44 percent of these cases, the mediation board valuation was accepted and the case was settled. Of the cases in which the mediation board valuation was rejected, 79 percent were voluntarily dismissed, and presumably settled, within six months of mediation.<sup>42</sup> This pretrial settlement activity in

<sup>37</sup> RULE 21, RULES OF THE CIRCUIT COURT FOR THE COUNTY OF WAYNE, in MICHIGAN COURT RULES (Supp. 1972).

<sup>38</sup> *Id.*

<sup>39</sup> RULE 21.3, in *id.*

<sup>40</sup> "Actual costs" include those costs and fees payable in any civil action, plus an attorney's fee set in accordance with the minimum fee per trial day set by the State Bar of Michigan. RULE 21.14, in *id.*

<sup>41</sup> RULE 21.13, in *id.*

<sup>42</sup> The activity of the mediation board during the summer of 1971 is summarized below:

<u>Period</u>	<u>Cases Evaluated</u>	<u>Valuation Accepted</u>	<u>Valuation Rejected</u>
June 14-June 24	60	26	34
June 28-July 8	45	19	26
August 9-August 19	<u>63</u>	<u>29</u>	<u>34</u>
TOTALS	168	74	94
<u>Period</u>	<u>Dismissed within 6 mos. of Rejection</u>	<u>Total Cases Disposed of by Mediation</u>	
June 14-June 24	27	53	
June 28-July 8	23	42	
August 9-August 19	<u>24</u>	<u>53</u>	
TOTALS	74	148	

Information supplied in telephone interview with Jennie Pierce, Tribunal Clerk, Wayne County Circuit Court, Dec. 8, 1972.

automobile negligence cases resulting from the availability of mediation may have influenced the nature of the cases reaching the trial stage during the six-member jury sampling period.

The discovery of insurance policy limits was permitted by a general court rule revision effective April 15, 1971.<sup>43</sup> The number of settlements motivated by the knowledge of the opposing party's insurance coverage is unknown. The impact, if any, of this rule change would be confined to the six-member jury cases in this study. It should be noted that, unlike the mediation board, discovery of insurance policy limits may promote settlements in other general civil cases as well as in automobile negligence cases.

3. *Trial*—Trial procedures in Wayne County Circuit Court changed very little during the time periods considered.<sup>44</sup> The number of regular judges remained constant at twenty-seven from 1969 to 1971, although visiting judges have been assigned to the court at various times.<sup>45</sup> Judges are assigned to cases according to a two-tiered, blind-draw system: one judge, assigned by blind draw, handles the case throughout the pretrial proceedings; another judge, also assigned by blind draw, hears the trial of the case. Voir dire is typically conducted by the judge, who interrogates the panel using questions previously submitted by the attorneys. In twelve-member jury cases the practice was to impanel fourteen jurors and, if no jurors were excused during trial, to dismiss two by lot immediately before the jury retired for deliberation. After the change to a six-member jury, seven jurors were impaneled and one dismissed prior to deliberation.

Following the presentation of evidence on the issues of liability and damages, the final arguments of counsel inform the jury of the total amount of damages sought. The amount of damages requested in the plaintiff's complaint is unknown to the jurors.

4. *Jury Deliberation*—Of course, the most prominent change in the civil jury between the two sampling periods was the reduction in jury size from twelve to six members. The effects of this change are the focus of this study.

During the time periods involved, the eligibility requirements

<sup>43</sup> MICHIGAN GENERAL COURT RULE 310.5, MICHIGAN COURT RULES ANNOTATED (J. Honigman & C. Hawkins Supp. 1972) (applicable to Wayne County only).

<sup>44</sup> Although the formal trial processes remained the same, the court rules were revised to permit depositions of expert witnesses to be taken and received as evidence, thus eliminating the delay of trials because of the unavailability of expert witnesses. RULE 302.7, in *id.* In addition, court rules were modified to allow production of true certified copies of hospital medical records in response to a subpoena. This modification obviates the necessity for appearance of medical and hospital witnesses to produce original medical records at trial. MICHIGAN GENERAL COURT RULE 506.7, in *id.*

<sup>45</sup> See Table XIII in the Appendices to the 1969 and 1971 annual reports of the Supreme Court of Michigan.

for jury duty remained the same.<sup>46</sup> Prospective jurors are selected from the current voter registration lists. The bill lowering the voting age from twenty-one to eighteen years was passed on August 4, 1971, but the legislation was not effective until January 1, 1972.<sup>47</sup> None of the newly eligible voters served on any of the juries in this study.<sup>48</sup> The method by which the jury commission selected the jury panels did not change in any material way between March, 1969, and August, 1971.<sup>49</sup> Therefore, there is no reason to believe that the jury composition varied in any meaningful way as between the two periods sampled.

Since the jury deliberations are held in secret, there is no way to monitor any changes in the deliberations themselves. It should be noted, however, that in both the twelve-member jury sample and the six-member jury sample, verdicts were received when five-sixths of the jurors had reached agreement.

## II. DATA

In this section, the data from twelve-member jury cases are compared with the data from six-member jury cases. The salient differences between the two samples are merely noted, without attempting to identify the cause or causes of the differences. An interpretation of the data is offered in the statistical analysis section which follows the presentation of the data.

### *A. Manner of Trial Termination After Jury Impaneled*

The cases in the two samples are those which the Wayne County Clerk of Courts classifies as "disposed of by jury trial." This category includes all civil cases resolved in whatever manner after having been assigned for jury trial. Figure 2 provides a tabular description of the manner of trial termination in the sampled cases.

As Figure 2 indicates, after the jury is impaneled there are relatively fewer settlements in the six-member jury cases than in the twelve-member jury cases. In automobile negligence cases

<sup>46</sup> Juror qualifications are specified in MICH. COMP. LAWS ANN. § 600.1306 (Supp. 1972). Those classes of persons prohibited from jury service are listed in *id.* § 600.1307.

<sup>47</sup> The Age of Majority Act of 1971, P.A. 1971, No. 79, §§ 1-5, MICH. COMP. LAWS ANN. §§ 722.51-.55 (Supp. 1972).

<sup>48</sup> Telephone interview with the Mary N. Morley, Executive Secretary to the Wayne County Jury Commission, Mar. 12, 1973.

<sup>49</sup> The procedure for selection of jury panels is specified in detail in MICH. COMP. LAWS ANN. §§ 600.1308-.1342 (Supp. 1972).

FIGURE 2

## MANNER OF TRIAL TERMINATION AFTER JURY IMPANELED

12-Member Jury						
Type of Case	Number of Cases	Percentage* of Cases Terminated by:				
		Verdict	Settlement	Directed Verdict	Mistrial	Hung Jury
AN	111	65.8%	29.7%	0.0%	4.5%	0.0
OCG	82	61.0	28.1	8.5	0.0	2.4
TOTAL	193	63.7	29.0	3.6	2.6	1.0
6-Member Jury						
AN	170	77.6%	19.4%	2.4%	0.0%	0.6%
OGC	122	64.0	22.5	13.9	1.6	0.0
TOTAL	292	72.0	19.8	7.2	0.7	0.3

\*Percentages may not add to 100 because of rounding.

there are roughly 10 percent fewer settlements; the reduction in settlements in other general civil cases is less pronounced. The lower percentage of settlements after trial has begun in six-member jury cases accounts for the higher percentage of six-member jury cases resulting in verdicts.

Only three hung juries appear in the samples—two in the twelve-member jury sample and one in the six-member jury sample. Hung juries occur in less than 1 percent of the civil jury trials in Wayne County Circuit Court.

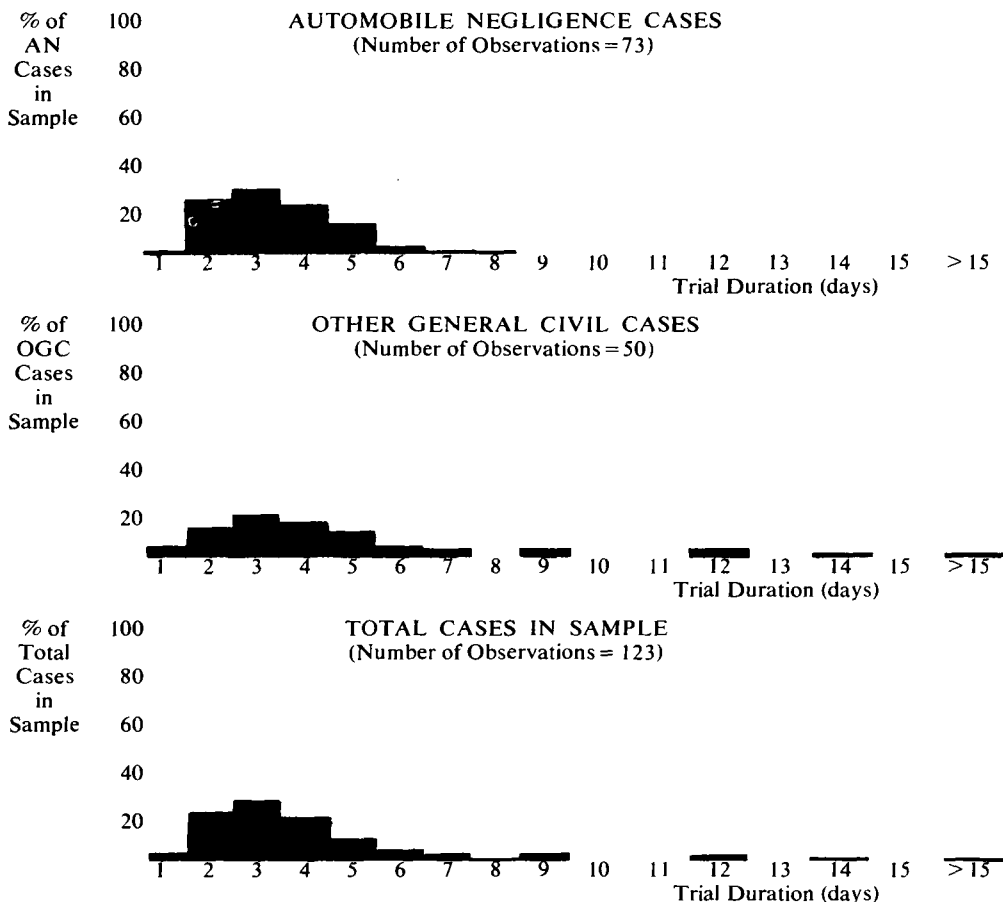
### B. Trial Duration

For each court day during which there is some trial activity in a case, a "trial in progress" notation is made in the docket book. This docket entry is recorded whether the trial activity consumes only a few minutes or an entire court day.<sup>50</sup> The number of such entries recorded for each case is thus a very rough measure of the duration of a trial. This measure is relatively insensitive to the predicted small decrease in trial duration which may result when the jury size is reduced.

Figure 3 displays histograms, or bar charts, describing the trial durations in days, for cases ending in verdicts. Figure 4 provides the descriptive statistics of the distributions shown in Figure 3. Based on this data it appears that there is little difference between the trial duration in twelve-member jury cases and that in

<sup>50</sup> A full court day consists of five and a half hours. WAYNE COUNTY CIRCUIT COURT RULE 3.2, in MICHIGAN COURT RULES (Supp. 1972) states, *inter alia*: "The hours of court shall be from 9:30 A.M. to 12:30 P.M. and 2:00 P.M. to 4:30 P.M., except as otherwise ordered by the Court."

FIGURE 3A

TRIAL DURATION DISTRIBUTIONS  
TRIALS ENDING IN VERDICT*12-Member Jury*

six-member jury cases. For both samples the median trial duration in automobile negligence cases is three days and the median trial duration in other general civil cases is four days.

Figures 5 and 6 provide comparable data on trial durations for trials ending in settlements. The histograms in Figure 5 graphically illustrate the point that settlements are most likely to occur on the second day of trial.

### *C. Prevailing Party*

For purposes of this study a plaintiff's verdict is defined as a verdict awarding the plaintiff some net amount, however small. Thus, in cases in which the defendant recovers some amount on a

FIGURE 3B

TRIAL DURATION DISTRIBUTIONS  
TRIALS ENDING IN VERDICT

*6-Member Jury*

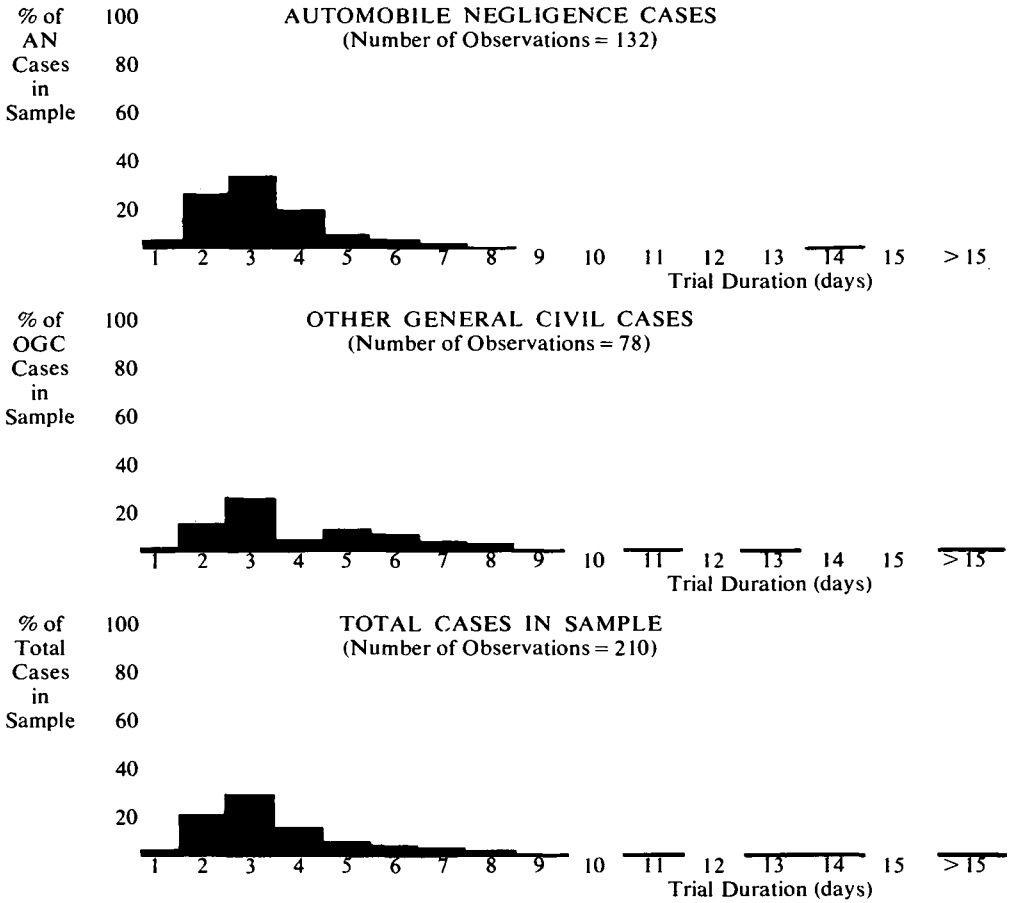
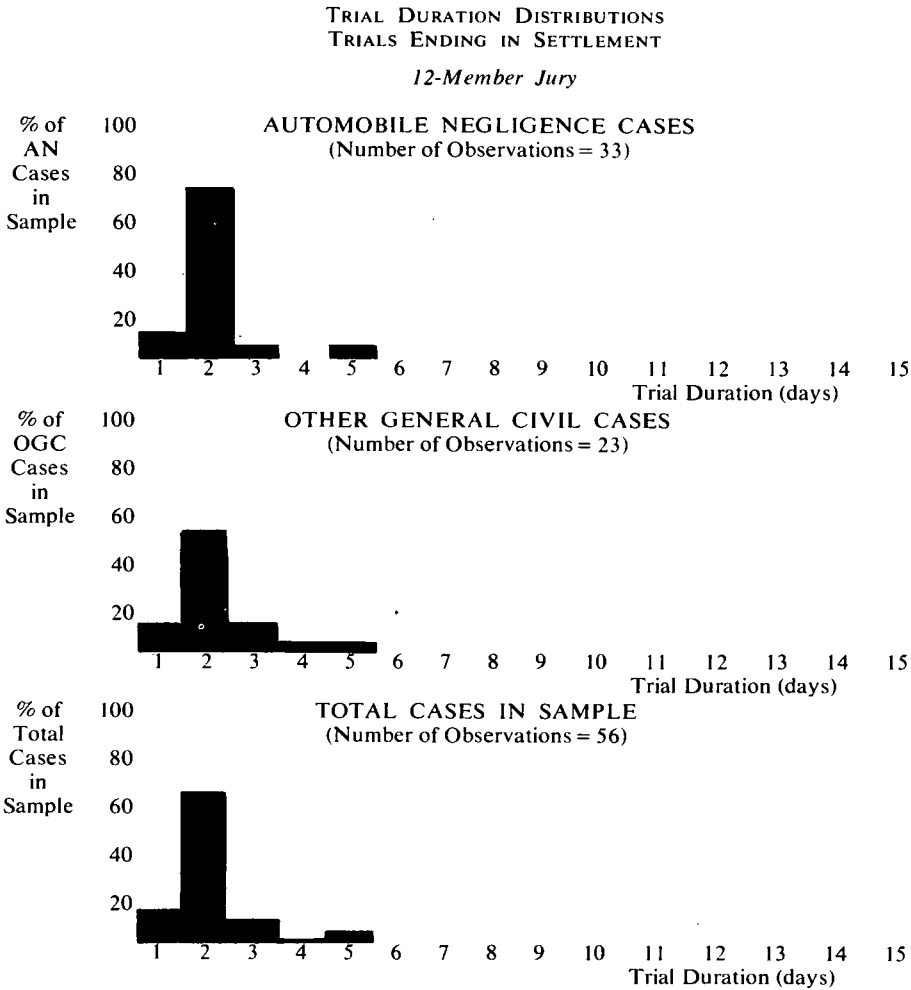


FIGURE 4  
TRIAL DURATION  
TRIALS ENDING IN VERDICT  
(DURATION IN DAYS)

<i>12-Member Jury</i>						
Type of Case	Number of Verdicts	Median Trial Duration	Mean Trial Duration	Standard Deviation	Minimum Trial Duration	Maximum Trial Duration
AN	73	3.0	3.4	1.3	1.0	8.0
OGC	50	4.0	4.7	3.9	1.0	24.0
TOTAL	123	3.0	3.9	2.7	1.0	24.0
<i>6-Member Jury</i>						
AN	132	3.0	3.3	1.6	1.0	14.0
OGC	78	4.0	4.6	3.3	1.0	25.0
TOTAL	210	3.0	3.8	2.4	1.0	25.0



FIGURE 5A



counterclaim, the amount awarded to the plaintiff must exceed the amount awarded to the defendant in order to have a plaintiff's verdict. Also, in cases where there are multiple parties, if any plaintiff recovers some net amount from a defendant, this is considered a plaintiff's verdict. All cases not classifiable as plaintiffs' verdicts are classified as defendants' verdicts.

Figure 7 displays the percentages of plaintiffs' verdicts in the samples. For the twelve-member jury the percentage of verdicts for plaintiff is about 52 percent for each category of cases. For the six-member jury, the percentage of plaintiffs' verdicts in automobile negligence cases is only 49.2 percent, but the percentage of plaintiffs' verdicts in other general civil cases is over 60 percent.

FIGURE 5B

TRIAL DURATION DISTRIBUTIONS  
TRIALS ENDING IN SETTLEMENT

*6-Member Jury*

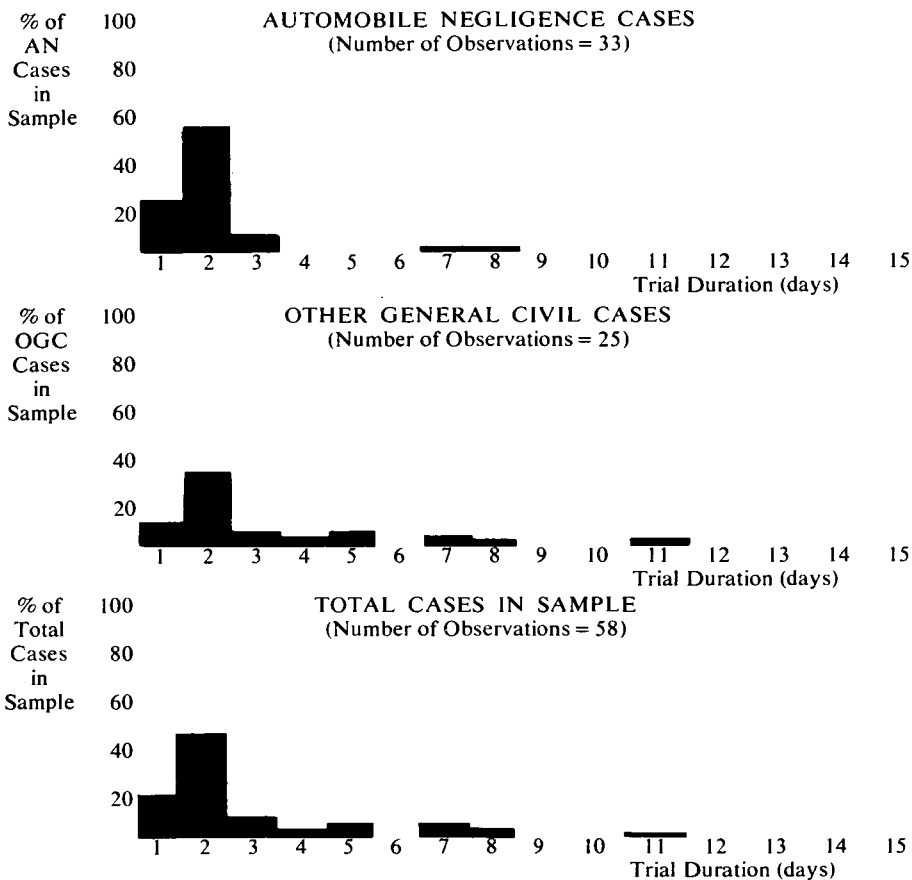


FIGURE 6

TRIAL DURATION  
TRIALS ENDING IN SETTLEMENT  
(DURATION IN DAYS)

*12-Member Jury*

Type of Case	Number of Settlements	Median Trial Duration	Mean Trial Duration	Standard Deviation	Minimum Trial Duration	Maximum Trial Duration
AN	33	2.0	2.1	0.9	1.0	5.0
OGC	23	2.0	2.2	1.0	1.0	5.0
TOTAL	56	2.0	2.2	0.9	1.0	5.0
<i>6-Member Jury</i>						
AN	33	2.0	2.2	1.5	1.0	8.0
OGC	25	2.0	3.5	2.5	1.0	11.0
TOTAL	58	2.0	2.7	2.1	1.0	11.0

FIGURE 7

PREVAILING PARTY  
TRIALS ENDING IN VERDICT

Type of Case	12-Member Jury			6-Member Jury		
	Verdicts Rendered	Plaintiffs' Verdicts	% Plaintiffs' Verdicts	Verdicts Rendered	Plaintiffs' Verdicts	% Plaintiffs' Verdicts
AN	73	38	52.1%	132	65	49.2%
OGC	50	26	52.0%	78	48	61.5%
TOTAL	123	64	52.0%	210	113	53.8%

### D. Amount Awarded

Because of the conventions observed in this study, a verdict for the plaintiff means that the plaintiff recovers some net amount; a verdict for the defendant means that the plaintiff has no net recovery. Therefore the consideration of amounts awarded focuses on plaintiffs' verdicts only.

In both samples, the amounts awarded in each category form a distribution of dollar values. The respective distributions of amounts awarded are represented by the histograms shown in Figure 8. Numerical descriptions of the amount awarded distributions are provided in Figure 9. The amounts awarded by the twelve-member jury range from a minimum of \$152 to a maximum of \$225,000. The six-member jury awards range from \$500 to \$315,000. Although the range in awards is quite large, an examination of the histograms shows that most of the amounts awarded are concentrated in the region less than \$10,000. The distributions of amounts awarded are certainly not characterized by a normal, or "bell," shape. Instead they are highly skewed, having a wide range with the bulk of the awards falling in the lower part of this range.<sup>51</sup> Because the mean<sup>52</sup> is quite sensitive to extremely high awards, the median<sup>53</sup> is a better indicator of the "location" of the distribution than is the mean.<sup>54</sup>

<sup>51</sup> A distribution is "skewed" when "the length of one of the *tails* of the distribution, relative to the central section, is disproportionate to the other." 1 W. HAYS & R. WINKLER, *STATISTICS: PROBABILITY, INFERENCE, AND DECISION* 153 (1970). For a discussion of the characteristics of a skewed distribution, see *id.* at 152-55.

<sup>52</sup> The mean, in this context, is merely the arithmetic average of all amounts awarded making up the distribution. See T. & R. WONNACOTT, *INTRODUCTORY STATISTICS* 13 (1969).

<sup>53</sup> The median is the fiftieth percentile, *i.e.*, the value below which half the values in the sample fall. *Id.* at 12.

<sup>54</sup> It is commonly acknowledged that whenever a distribution is highly skewed, the median is likely to be a more appropriate indicator of central tendency than the mean, 1 W. HAYS & R. WINKLER, *supra* note 51, at 154; M. BLALOCK, *SOCIAL STATISTICS* 58 (1960).

A comparison of the medians of the distributions by category of cases indicates that while the median amount awarded in automobile negligence cases increased from \$4,400 in twelve-member jury cases to \$6,662 in six-member jury cases, the median amount awarded in other general civil cases dropped from \$14,750 in twelve-member jury cases to \$12,965 in six-member jury cases.

Hans Zeisel's prediction of a wider variation in amounts awarded by the six-member jury seems<sup>55</sup> to be borne out by the data in automobile negligence cases showing a standard deviation<sup>56</sup> of \$58,355 for the six-member jury awards while the standard deviation of twelve-member jury awards is only \$24,834. This relative relationship does not carry over to the other general civil cases, where the standard deviation of six-member jury awards is about 10 percent less than the standard deviation of twelve-member jury awards.

### *E. Amount Sought in Plaintiff's Complaint*

When a plaintiff files an action, the amount of damages requested in the *ad damnum* clause of the complaint is entered in the court records. The amount sought in the complaint is in theory the plaintiff's attorney's estimate of the potential value of the plaintiff's cause of action if the case were to go to trial. In practice, however, the stated amount sought is frequently inflated out of proportion to the actual damage sustained. Figure 10 presents the distribution of amounts sought in the complaint for all cases for which data were available. The numerical descriptions of the distributions in Figure 10 are provided in Figure 11.

The amounts sought in the complaint in twelve-member jury cases range from \$2,000 to \$2,500,000. For the six-member jury, the amounts sought range from \$1,000 to \$3,000,000. The wide range in amounts sought in both samples contributes to the extremely large standard deviations of the respective distributions. The median amount sought in six-member jury cases is higher in each category than the median amount sought in twelve-member jury cases. Like the amounts awarded, the amounts sought in the complaint do not conform to a normal, or bell, shape. Certain round number amounts sought—for example, \$50,000, \$100,000,

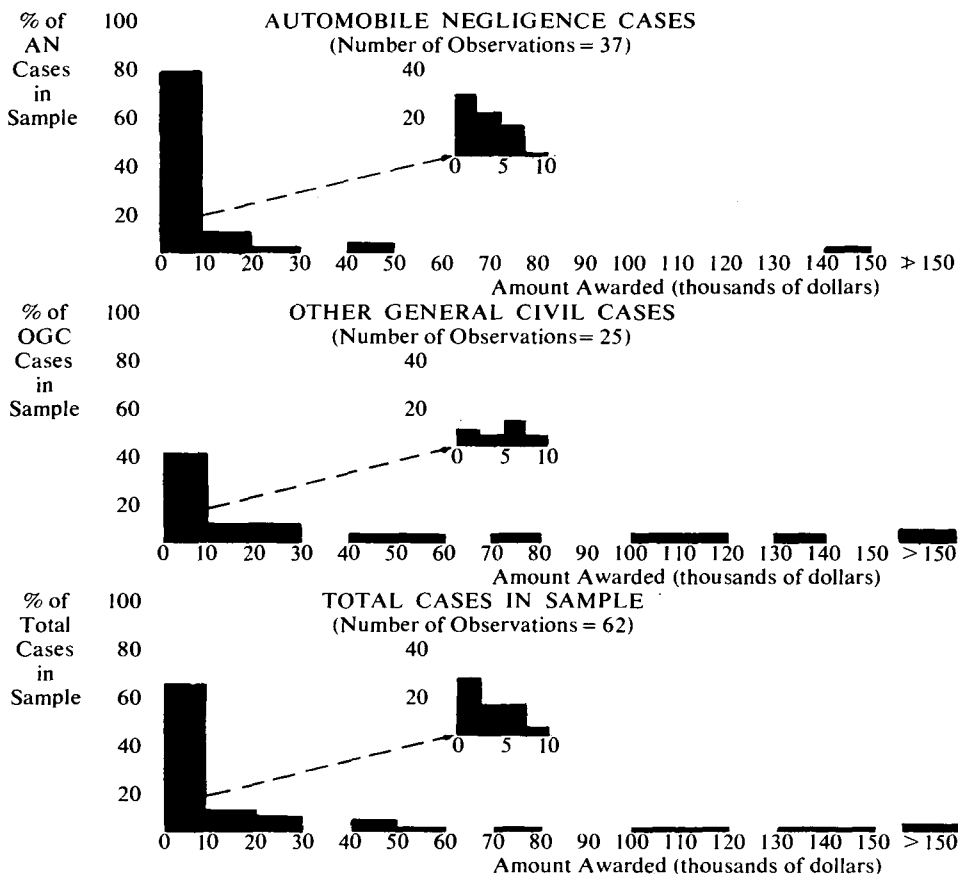
<sup>55</sup> Zeisel, *supra* note 9, at 717.

<sup>56</sup> The standard deviation, determined by taking the square root of the arithmetic mean of the squared deviations from the mean, is a measure of the dispersion of a distribution. See M. BLALOCK, *supra* note 54, at 66-73; I. W. HAYS & R. WINKLER, *supra* note 51, at 155-61.

FIGURE 8A

AMOUNT AWARDED DISTRIBUTIONS  
TRIALS ENDING IN PLAINTIFF'S VERDICT

*12-Member Jury*



\$150,000, \$200,000—appear with great frequency. Figures 12 and 13 provide comparable data on amounts sought in the plaintiff's complaint for only those cases ending in a verdict for the plaintiff.

*F. Amount Awarded as a Percentage  
of the Amount Sought in  
Plaintiff's Complaint*

The amount awarded by a jury is presumably a function of the value of the plaintiff's cause of action. In Wayne County Circuit Court the jury is informed of the total amount of damages sought in the final arguments of counsel; this amount is not recorded in

FIGURE 8B

AMOUNT AWARDED DISTRIBUTIONS  
TRIALS ENDING IN PLAINTIFF'S VERDICT

6-Member Jury

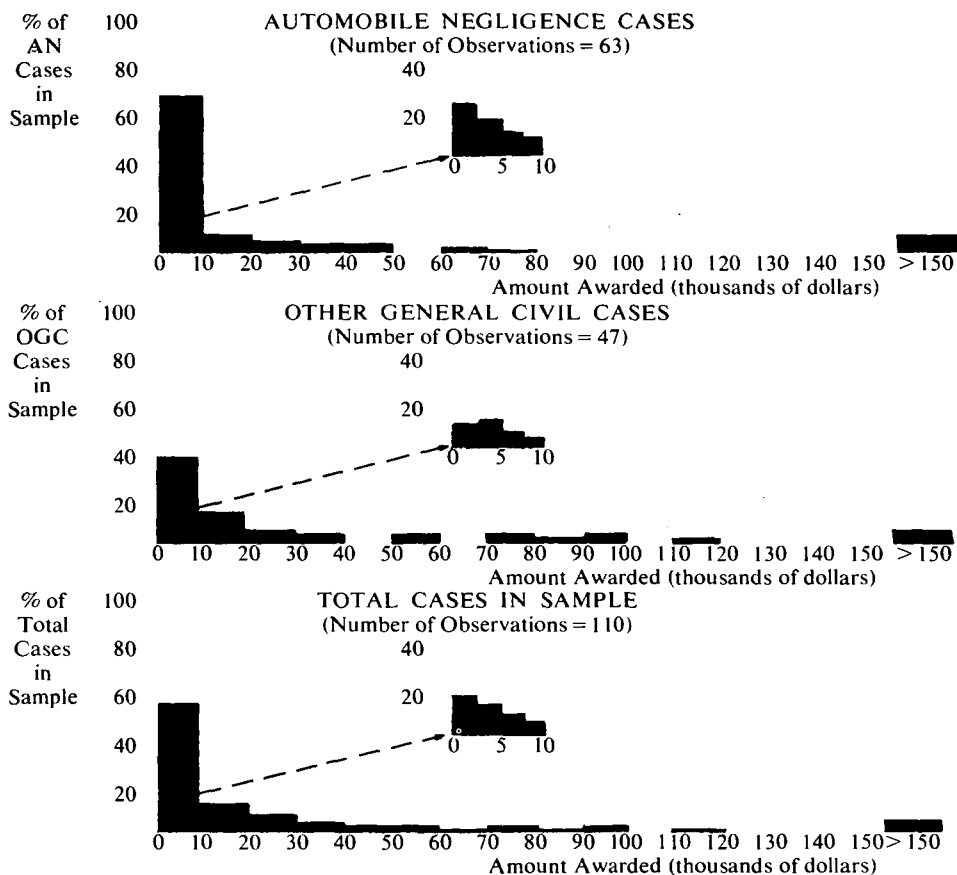
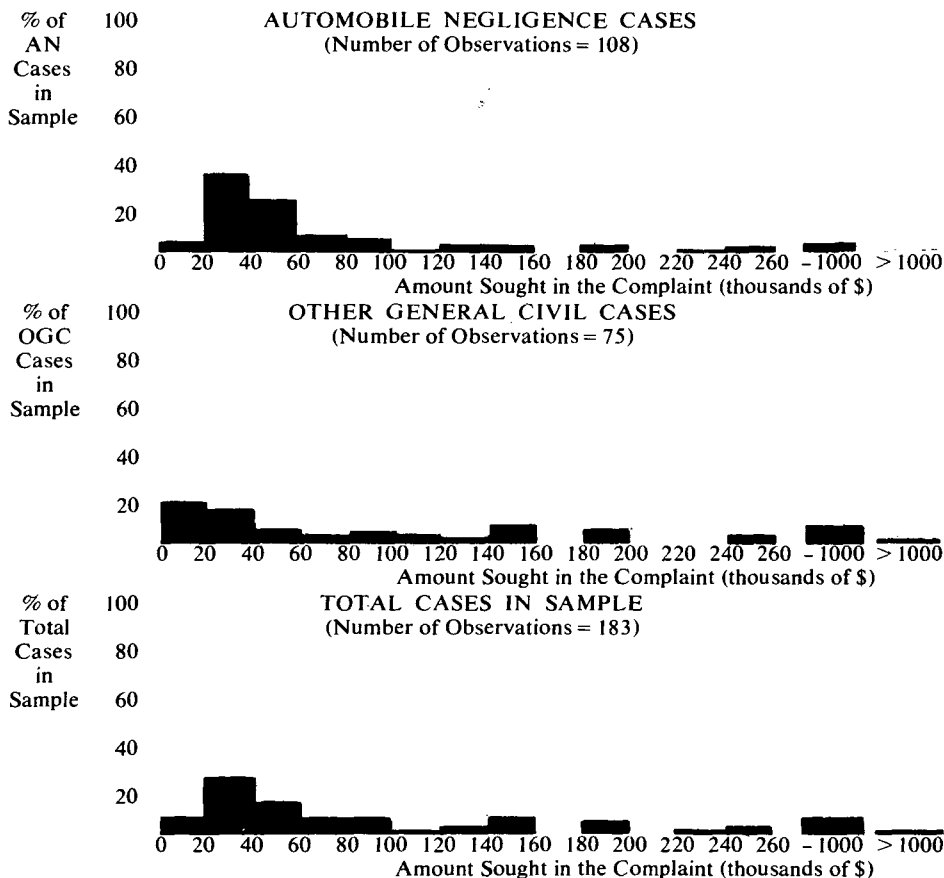


FIGURE 9  
AMOUNT AWARDED  
TRIALS ENDING IN PLAINTIFF'S VERDICT

12-Member Jury						
Type of Case	Number of Verdicts for Plaintiff	Median Amount Awarded	Mean Amount Awarded	Standard Deviation	Minimum Amount Awarded	Maximum Amount Awarded
AN	37	\$ 4,400	\$11,147	\$24,834	\$152	\$143,000
OGC	25	14,750	44,608	61,698	750	225,000
TOTAL	62	6,360	24,640	46,212	152	225,000
6-Member Jury						
AN	63	\$ 6,662	\$23,768	\$58,355	\$550	\$315,000
OGC	47	12,965	38,589	55,561	500	225,000
TOTAL	110	7,740	30,100	57,393	500	315,000

FIGURE 10A

AMOUNT SOUGHT IN THE COMPLAINT  
ALL CASES*12-Member Jury*

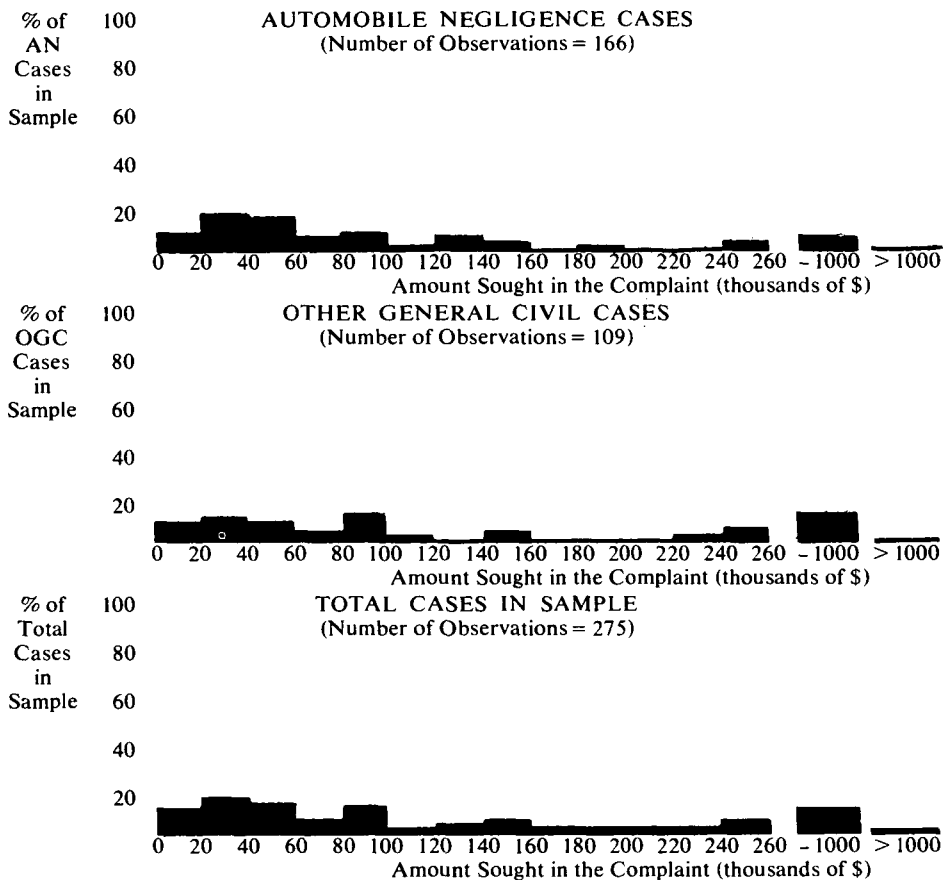
the court records. The best available indication of the value of the plaintiff's cause of action is the amount of damages sought in plaintiff's complaint. The performance of twelve-member and six-member juries may be further scrutinized by examining the ratio of the amount awarded by the jury to the amount sought in the complaint.

Figure 14 displays the respective distributions of the amounts awarded as a percentage of the amount sought in the complaint for all cases ending in a verdict for the plaintiff. The statistical descriptions of the distributions are provided in Figure 15. In twelve-member jury cases, the amount awarded as a percentage of the amount sought ranges from a minimum of .5 percent to a

FIGURE 10B

AMOUNT SOUGHT IN THE COMPLAINT  
ALL CASES

## 6-Member Jury

FIGURE 11  
AMOUNT SOUGHT IN THE COMPLAINT  
ALL CASES

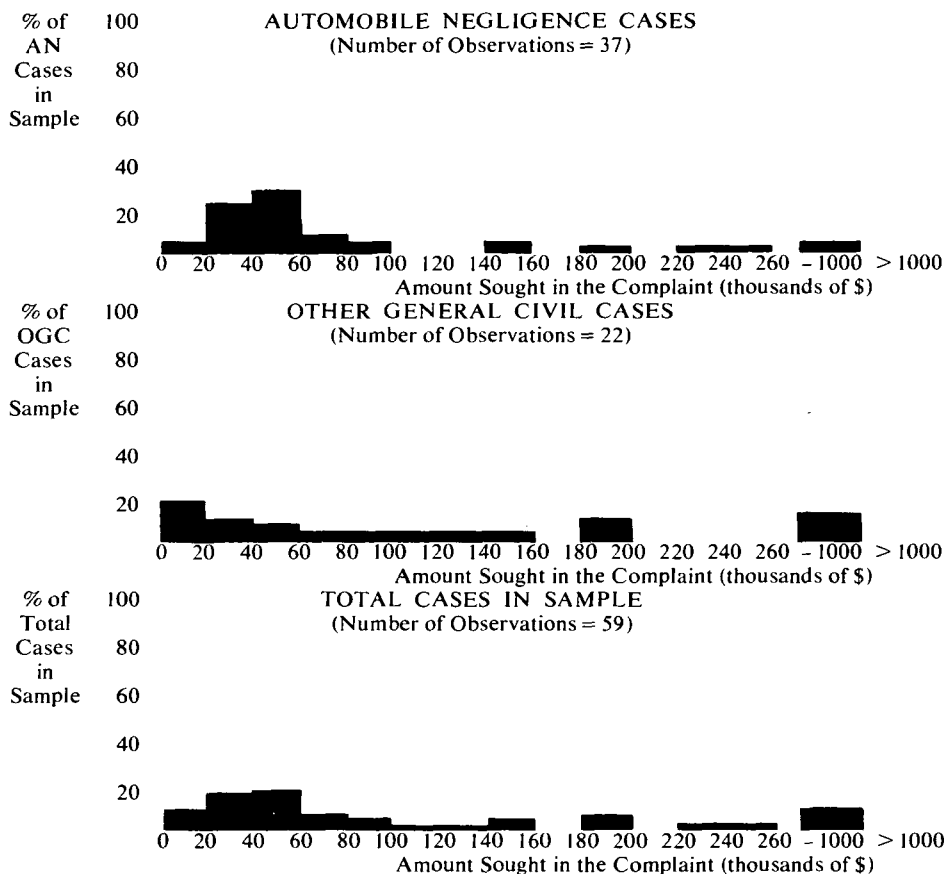
Type of Case	Number of Cases	12-Member Jury				Minimum Amount Sought	Maximum Amount Sought
		Median Amount Sought	Mean Amount Sought	Standard Deviation			
AN	108	\$ 50,000	\$ 78,165	\$ 91,647	\$10,000	\$ 600,000	
OGC	75	75,000	141,550	300,990	2,000	2,500,000	
TOTAL	183	55,000	104,140	206,760	2,000	2,500,000	
Type of Case	Number of Cases	6-Member Jury				Minimum Amount Sought	Maximum Amount Sought
		Median Amount Sought	Mean Amount Sought	Standard Deviation			
AN	166	\$ 60,000	\$114,790	\$247,530	\$ 7,083	\$3,000,000	
OGC	109	100,000	190,030	265,550	1,000	1,750,000	
TOTAL	275	75,000	144,620	256,980	1,000	3,000,000	



FIGURE 12A

AMOUNT SOUGHT IN THE COMPLAINT  
TRIALS ENDING IN PLAINTIFF'S VERDICT

*12-Member Jury*



maximum of 450 percent; in six-member jury cases, the range is from .6 percent to 200 percent. Because the ratios in excess of 100 percent receive much weight in calculating the mean of each distribution, in each category of cases the mean is much higher than the median. Again, the median is the better indicator of the location of the distributions.

In automobile negligence cases the median of the amount awarded as a percentage of the amount sought in the complaint increased from 6.7 percent in twelve-member jury cases to 14 percent in six-member jury cases. In other general civil cases the median dropped from 33.4 percent in twelve-member jury cases to 20 percent in six-member jury cases. Plaintiffs are awarded a

FIGURE 12B

AMOUNT SOUGHT IN THE COMPLAINT  
TRIALS ENDING IN PLAINTIFF'S VERDICT

6-Member Jury

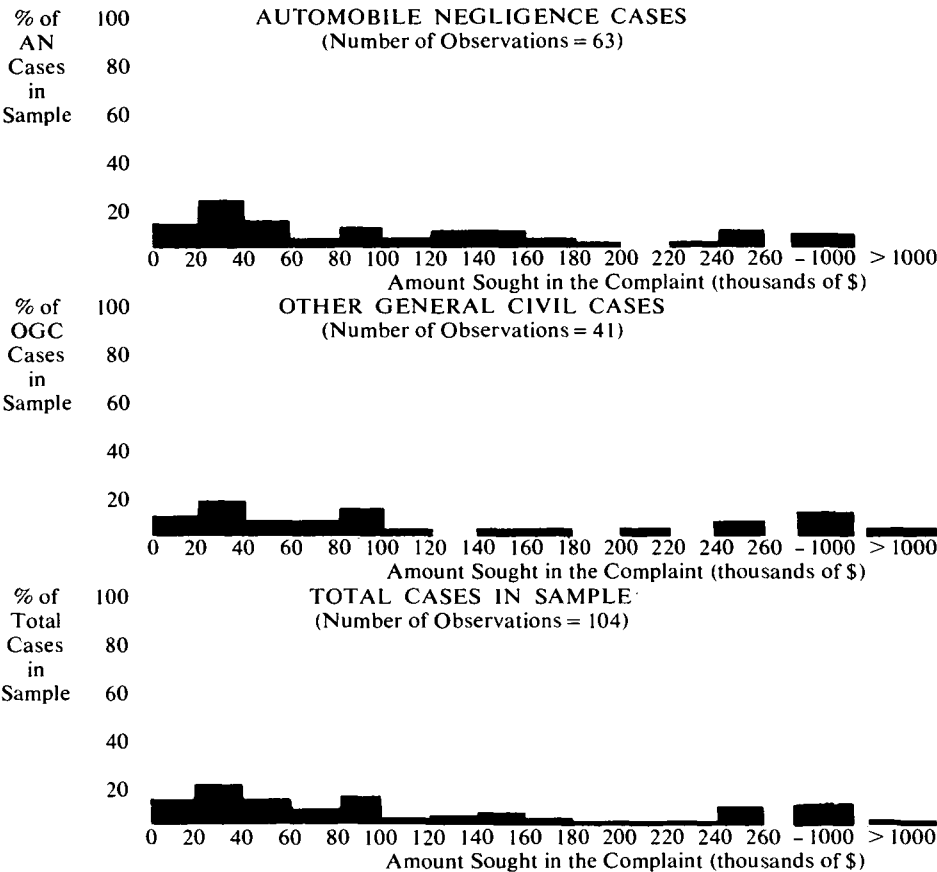


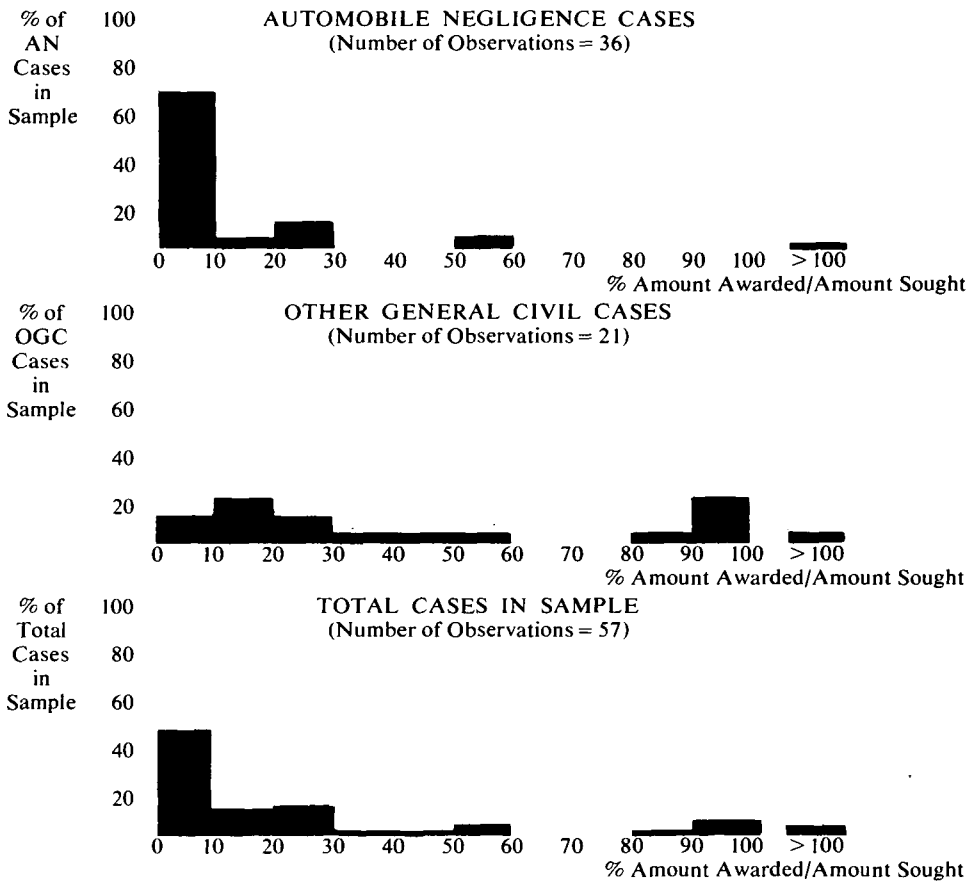
FIGURE 13  
AMOUNT SOUGHT IN THE COMPLAINT  
TRIALS ENDING IN PLAINTIFF'S VERDICT

12-Member Jury						
Type of Case	Number of Plaintiffs' Verdicts	Median Amount Sought	Mean Amount Sought	Standard Deviation	Minimum Amount Sought	Maximum Amount Sought
AN	37	\$50,000	\$ 84,054	\$ 89,107	\$10,000	\$ 400,000
OGC	22	75,000	126,420	127,060	3,973	400,000
TOTAL	59	55,000	99,850	105,830	3,973	400,000
6-Member Jury						
AN	63	\$60,000	\$ 97,524	\$ 92,741	\$10,000	\$ 450,000
OGC	41	80,000	186,090	314,740	5,500	1,750,000
TOTAL	104	66,800	132,440	213,400	5,500	1,750,000

FIGURE 14A

AMOUNT AWARDED AS A PERCENTAGE OF  
THE AMOUNT SOUGHT IN THE COMPLAINT  
TRIALS ENDING IN PLAINTIFF'S VERDICT

*12-Member Jury*



higher percentage of the amount sought in other general civil cases than in automobile negligence cases.

III. STATISTICAL ANALYSIS AND  
DATA INTERPRETATION

*A. Explanation of Statistical Technique*

The comparison of data from twelve-member jury cases with data from six-member jury cases reveals some differences between them, but these disparities may not result from the change in jury size. Rival explanations for the observed differences must be seriously considered.

FIGURE 14B

AMOUNT AWARDED AS A PERCENTAGE OF  
THE AMOUNT SOUGHT IN THE COMPLAINT  
TRIALS ENDING IN PLAINTIFF'S VERDICT

## 6-Member Jury

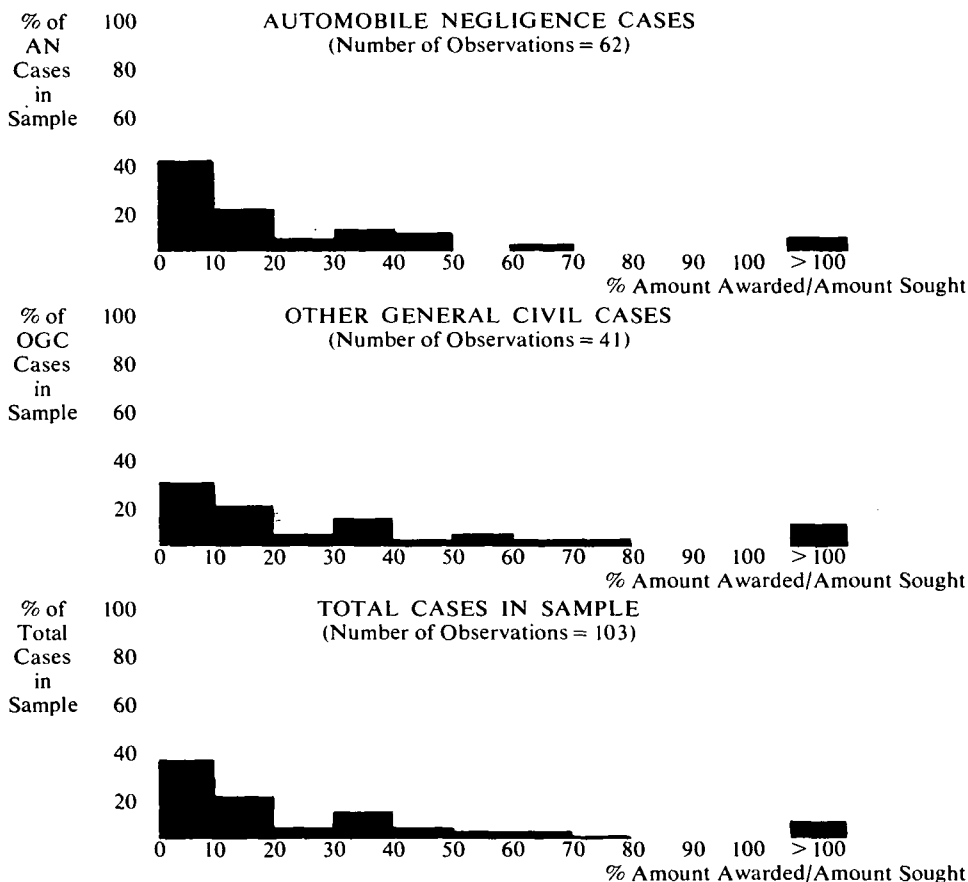


FIGURE 15

AMOUNT AWARDED AS A PERCENTAGE OF  
THE AMOUNT SOUGHT IN THE COMPLAINT  
TRIALS ENDING IN PLAINTIFF'S VERDICT

Type of Case	Number of Plaintiffs' Verdicts	12-Member Jury			
		Median % Am't Aw'd/ Am't So't	Mean % Am't Aw'd/ Am't So't	Minimum % Am't Aw'd/ Am't So't	Maximum % Am't Aw'd/ Am't So't
AN	36	6.7%	23.2%	0.5%	450.0%
OGC	21	33.4	51.6	4.0	187.5
TOTAL	57	11.2	33.6	0.5	450.0
Type of Case	Number of Plaintiffs' Verdicts	6-Member Jury			
		Median % Am't Aw'd/ Am't So't	Mean % Am't Aw'd/ Am't So't	Minimum % Am't Aw'd/ Am't So't	Maximum % Am't Aw'd/ Am't So't
AN	62	14.0%	24.0%	0.6%	200.0%
OGC	41	20.0	36.9	0.7	200.0
TOTAL	103	14.5	29.1	0.6	200.0

An important rival explanation is that there is no real difference between the two different-sized juries, and that the observed differences between the two samples arose purely by chance, for even if the two samples in this study were taken solely from twelve-member jury cases, the limited size of the samples would cause some differences between them simply as a chance occurrence. Thus in order for the observed differences between the twelve-member jury sample and the six-member jury sample to support the inference that there are genuine differences between six-member and twelve-member jury verdicts, the observed differences must have a low probability of being mere chance variations. Statistical methods can be used to determine the likelihood that the observed differences would emerge by chance if the true performance of the two juries were identical. This statistical technique is commonly termed significance testing.

Significance tests<sup>57</sup> are generally used to choose between the hypothesis that no change has occurred, the so-called "null hypothesis," and the hypothesis that a change has taken place, the alternative hypothesis. The validity of the null hypothesis, a statement about a characteristic of one or more statistical populations,<sup>58</sup> is tested in the light of evidence from samples.<sup>59</sup> In this study, the following null hypotheses are to be tested:

1. The proportion of cases settled after trial has begun is the same in trials before a six-member jury and in trials before a twelve-member jury.
2. The six-member jury has the same proportion of cases ending in hung juries as the twelve-member jury.
3. The six-member jury renders verdicts in favor of plaintiffs and defendants in the same proportion as the twelve-member jury renders its verdicts.

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<sup>57</sup> For a general discussion of the uses of significance tests and their limitations, see I W. HAYS & R. WINKLER, *supra* note 51, at 375-77.

<sup>58</sup> The word "population" is used to mean the totality of potential units for observation. I W. HAYS & R. WINKLER, *supra* note 51, at 279. In this study there are two populations: (1) all twelve-member civil jury trials in Wayne County Circuit Court and (2) all six-member civil jury trials in Wayne County Circuit Court.

<sup>59</sup> The word "sample" refers to a portion of a population. *Id.* at 280-81. In this study there are two samples: (1) twelve-member civil jury trials in Wayne County Circuit Court during the period from March 1, 1969, to August 31, 1969, and (2) six-member civil jury trials in Wayne County Circuit Court during the period from March 1, 1971, to August 31, 1971. It should be noted that the samples in this study are not "randomly" drawn from the respective populations. To select a case "at random" from a population means that the case is selected in such a manner that each case in the population is equally likely to be selected. *Id.* at 48. In drawing the samples in this study, cases occurring within the sampling period were automatically included in the sample, whereas cases occurring outside the sampling period had no chance of being selected. Although the samples are not random, they are representative of the populations from which they were drawn.

4. In rendering a money judgment for the plaintiff, the six-member jury's damage awards are identical to the twelve-member jury's awards.

5. In rendering a money judgment in favor of the plaintiff, the six-member jury awards the same proportion of the damages sought in the complaint as the twelve-member jury awards.

Each of these hypotheses is simply an elaboration of the United States Supreme Court's statement that there should be no discernible difference between the results produced by the two different-sized juries. The burden of proof is imposed on the empirical data to cast doubt on the Court's presumption.

In testing each null hypothesis, the sample statistic most relevant and appropriate to the hypothesis is chosen. Then, assuming that the hypothesis is true, the probability<sup>60</sup> that the observed value of the sample statistic would occur by chance is calculated. This probability depends on the size of the sample and can only be determined if the sample is assumed to be random.<sup>61</sup>

If the calculated probability is higher than the standard .05 critical probability, the likelihood of chance occurrence is great enough that the null hypothesis is not rejected, and the investigator may choose either to accept the null hypothesis or to suspend judgment. If the calculated probability is less than .05, sufficient doubt is cast on the null hypothesis that it is said to be rejected in favor of the alternative. When a hypothesis is rejected, the sample statistic which triggered the rejection is said to be statistically significant.<sup>62</sup>

Before performing significance tests to aid in interpretation of the data, the limitations of the technique should be understood. Generally in the statistical literature, if the probability that a difference would occur by chance is less than .05,<sup>63</sup> the difference is termed statistically significant, and the rival explanation—that the difference was attributable to chance—is excluded. The establishing of a statistically significant difference eliminates only the

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<sup>60</sup> A probability number may vary between zero and one with an event becoming more and more likely to occur as its probability number increases from zero toward one. See I W. HAYS & R. WINKLER, *supra* note 51, at 43-47.

<sup>61</sup> The samples in this study are not truly random (see note 59 *supra*), but for purposes of computing the probabilities required in the significance tests, the samples can be assumed to be random.

<sup>62</sup> "Statistical significance" is a term which emphasizes the *improbability* that a given result is a chance occurrence under the initial hypothesis. The actual, practical importance of a statistically significant result depends upon such considerations as the reliability of the data and the materiality of the phenomena being explored. See I W. HAYS & R. WINKLER, *supra* note 51, at 399-400.

<sup>63</sup> See, e.g., T. & R. WONNACOTT, *supra* note 52, at 173; I W. HAYS & R. WINKLER, *supra* note 51, at 382.

rival explanation of chance; other rival explanations must still be considered.<sup>64</sup>

The use of a .05 critical probability is equivalent to saying that in order to find statistical significance, the difference must have less than a one in twenty probability of occurring by chance. The lower the critical probability, the less likely one is to make the mistake of rejecting the rival explanation of chance when in fact the difference was caused by chance.<sup>65</sup> If the critical probability is set too low, however, one would be more likely to err by attributing the difference to chance when in fact there has been a genuine change.<sup>66</sup> To guard against the latter type of error, this investigator is willing to consider a probability of chance occurrence of less than .20, a one in five probability, as indicating a tendency in the data. While the term statistically significant is reserved for instances in which the probability of chance occurrence is .05 or less, where the relevant probability is .20 or less an interpretation of the suggested change in the underlying data is offered.

Finally, in the significance tests which follow, a finding of no statistically significant difference does *not* prove that the verdicts of the six-member jury are identical to the verdicts of the twelve-member jury. Such a finding indicates only that the observed differences have such a high probability of arising by chance that true differences, if any, are obscured by statistical fluctuations. Although a difference may not be statistically significant, it may still be of practical importance, especially if the direction of the difference or its magnitude is unexpected.

### *B. Significance Tests*

**HYPOTHESIS 1:** *The proportion of cases settled after trial has begun is the same in trials before a six-member jury and in trials before a twelve-member jury.*

The sample statistic chosen to test the hypothesis is the difference between the proportion of settlements after the jury was impaneled in cases in the six-member jury sample and the

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<sup>64</sup> Winch & Campbell, *Proof? No. Evidence? Yes. The Significance of Tests of Significance*, 4 AM. SOCIOLOGIST 140, 143 (1969).

<sup>65</sup> This error of rejecting the null hypothesis when it is true is called Type I error. See 1 W. HAYS & R. WINKLER, *supra* note 51, at 394. An example of Type I error is convicting an innocent person.

<sup>66</sup> The error of accepting the null hypothesis when it is false is termed Type II error. See *id.* at 394. An example of Type II error is acquitting a guilty person.

proportion of settlements after the jury was impaneled in cases in the twelve-member jury sample. The middle column of Figure 16 shows the calculated differences between the sample proportions. These differences were calculated by subtracting the proportion of settlements in twelve-member jury cases from the proportion of settlements in six-member jury cases.

After the difference in proportions has been calculated, the next step is to assume that the hypothesis is true and to calculate the probability that the observed difference would occur by chance.<sup>67</sup> The results of this probability calculation are shown in the last column of Figure 16. Adopting a critical probability of .05, the hypothesis can be rejected in two categories: automobile negligence cases and the total number of cases in the sample. The hypothesis cannot be rejected for other general civil cases. The conclusion to be drawn is that in trials before a six-member jury there are significantly fewer settlements after the jury has been impaneled in automobile negligence cases and in the total of all types of cases in the sample.

It is certainly possible to find in these results statistical support for the proposition that in automobile negligence cases the immediate prospect of trial before a six-member jury increases a party's willingness to settle his lawsuit. Perhaps a more reasonable inference would be that the institution of a mediation board<sup>68</sup> and the change in court rules allowing discovery of insurance policy

<sup>67</sup> The probability that the observed difference between the two sample proportions would occur by chance may be calculated by applying some straightforward statistical relationships. Assuming that both sampling distributions were generated by random sampling, the distributions could be approximated by normal distributions. Therefore, we can say that the probability is approximately .95 that the difference between the two population proportions lies between

$$(P_6 - P_{12}) \pm 1.96 \sqrt{\frac{P_6(1 - P_6)}{n_6} + \frac{P_{12}(1 - P_{12})}{n_{12}}}$$

where  $P_6$  = proportion in the six-member jury sample  
 $n_6$  = number of observations in the six-member jury sample  
 $P_{12}$  = proportion in the twelve-member jury sample  
 $n_{12}$  = number of observations in the twelve-member jury sample

See T. & R. WONNACOTT, *supra* note 52, at 161. The number 1.96 is the critical point on the standard normal distribution corresponding to a two-sided probability area of .05. By using this same formula, substituting for  $P_6$ ,  $P_{12}$ ,  $n_6$ , and  $n_{12}$ , and solving for a characteristic critical value to replace 1.96, the probability that the observed difference would occur by chance, may be determined from a table of the probability areas for a standard normal distribution.

<sup>68</sup> See notes 37-42 and accompanying text *supra*.



FIGURE 16  
SETTLEMENTS AFTER JURY IMPANELED  
TEST STATISTICS

Type of Case	Difference Between Sample Proportions ( $P_6 - P_{12}$ )*	Probability That the Observed Difference Would Occur by Chance if the Population Proportions Were Equal
AN	-.103	.05
OGC	-.056	.37
TOTAL	-.092	.02

\*where  $P_6$  = proportion settled after jury impaneled in 6-member jury cases  
and  $P_{12}$  = proportion settled after jury impaneled in 12-member jury cases

FIGURE 17  
PREVAILING PARTY  
TEST STATISTICS

Type of Case	Difference Between Sample Proportions ( $P_6 - P_{12}$ )*	Probability That the Observed Difference Would Occur by Chance if the Population Proportions Were Equal
AN	-.029	.69
OGC	.095	.29
TOTAL	.018	.75

\*where  $P_6$  = proportion of plaintiff's verdicts in 6-member jury cases  
and  $P_{12}$  = proportion of plaintiff's verdicts in 12-member jury cases

limits<sup>69</sup> have changed the settlement pattern in automobile negligence cases. Assuming that there is a relatively fixed number of automobile negligence suits with a high probability of settlement, these changes in court processes may have caused an increase in the number of cases settled before trial, thus decreasing the number of cases settled after trial has begun. Because automobile negligence cases constitute almost 60 percent of the six-member jury sample, a very pronounced change in settlements in automobile negligence cases may be expected to exert great influence on the aggregate settlement pattern. Thus the fact that in the total of all cases in the sample there are significantly fewer settlements after the jury has been impaneled is not particularly surprising.

**HYPOTHESIS 2:** *The six-member jury has the same proportion of cases ending in hung juries as the twelve-member jury.*

There were so few hung juries—two in the twelve-member jury sample and one in the six-member jury sample—that it is impossible to employ the hypothesis testing technique to address the question of which size jury has the greater propensity to reach a verdict. One possible reason for the low number of hung juries in civil cases is the statutory provision for receipt of a verdict when five-sixths of the jurors reach agreement.<sup>70</sup> Because the verdicts need not be unanimous, hung juries are relatively rare.

**HYPOTHESIS 3:** *The six-member jury renders verdicts in favor of plaintiffs and defendants in the same proportion as the twelve-member jury renders its verdicts.*

The sample statistic chosen to test the hypothesis is the difference between the proportion of plaintiffs' verdicts in the six-member jury sample and the proportion of plaintiffs' verdicts in the twelve-member jury sample. The middle column of Figure 17 shows the calculated differences between the sample proportions. These differences were calculated by subtracting the proportion of verdicts for plaintiffs in twelve-member jury cases from the proportion of verdicts for plaintiffs in six-member jury cases.

The last column of Figure 17 indicates the probabilities<sup>71</sup> that the observed differences would occur by chance if the hypothesis were true. For each category of cases, the probability shown in Figure 17 is greater than the .05 critical probability. Therefore, for each category, the hypothesis cannot be rejected. There is no

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<sup>69</sup> See note 43 and accompanying text *supra*.

<sup>70</sup> MICH. COMP. LAWS ANN. § 600.1352 (Supp. 1972).

<sup>71</sup> The probabilities are determined according to the method described in note 67 *supra*.

statistically significant difference between the proportion of plaintiffs' verdicts rendered by the two different-sized juries.

**HYPOTHESIS 4:** *In rendering a money judgment for the plaintiff, the six-member jury's damage awards are identical to the twelve-member jury's awards.*

Since the amount awarded distributions are highly skewed (see Figure 8), the sample statistic with which to test the hypothesis must be chosen with care. Because of the odd shape of the distributions to be compared, the mean and the standard deviation are inappropriate to test the hypothesis. An appropriate sample statistic for use in comparing distributions of the type encountered here is the Mann-Whitney U statistic.<sup>72</sup> The Mann-Whitney U statistic employs the actual ranks of the various awards in the distributions as a device for testing the hypothesis that the two sample distributions compared are from the same population.

The first part of Figure 18 shows the calculated values of the Mann-Whitney U statistic for each category of cases. These values are calculated by combining the two samples to be compared and arranging the damage awards in order according to magnitude. Then ranks are assigned to each of the observations; the lowest amount is assigned rank 1; the next lowest, rank 2; and so on. After this ranking operation, the Mann-Whitney U statistic is calculated based on the number of observations in each sample and the sum of the ranks associated with each sample.

While the method of calculation of the Mann-Whitney U statistic is difficult to justify intuitively, the purpose behind the calculation is to examine the ranks of the observations rather than the "distance," in dollars, between them. Once the respective values of the Mann-Whitney U statistic have been determined, the next step is to assume that the hypothesis is true and to calculate the probability that the observed value of the Mann-Whitney U statistic would occur by chance. The results of this probability calculation are shown in the last column of the first part of Figure 18.

Applying the .05 critical probability, the hypothesis cannot be rejected in any category of cases. Although there is no statistically significant difference between the six-member jury's damage awards and the twelve-member jury's awards, in automobile negligence cases there seems to be a tendency toward a difference between the awards of the two different-sized juries. Figure 8

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<sup>72</sup> For a discussion of the characteristics of the Mann-Whitney U statistic, see 2 W. HAYS & R. WINKLER, *STATISTICS: PROBABILITY, INFERENCE, AND DECISION*, 231-34 (1970).

indicates that this difference is in the direction of higher awards by the six-member jury and is attributable to the relatively large percentage of six-member jury awards in excess of \$150,000. It would be naive, however, to make too much of this tendency in automobile negligence cases without controlling for any effects of inflation.

The Consumer Price Index for Detroit increased 9.9 percent from March-August, 1969, the sampling period for twelve-member jury cases, to March-August, 1971, the sampling period for six-member jury cases.<sup>73</sup> To attempt to remove the inflation component of any increase in amounts awarded,<sup>74</sup> the amounts awarded in 1971 (the six-member jury sample) are adjusted downward appropriately, and the test statistics recomputed. The revised test statistics are shown in the second part of Figure 18. Even after the inflation adjustment, there is still a tendency, although less pronounced, for six-member jury awards in automobile negligence cases to be higher than twelve-member jury awards. The tendency is quite sensitive to the magnitude of the inflation adjustment, and could be illusory. It should be reemphasized, however, that the differences between the awards of the two juries are not statistically significant.

**HYPOTHESIS 5:** *In rendering a money judgment in favor of the plaintiff, the six-member jury awards the same proportion of the damages sought in the complaint as the twelve-member jury awards.*

The results obtained by using the Mann-Whitney U statistic to test this hypothesis are shown in Figure 19. In the automobile negligence category, the hypothesis can be rejected since .03 is less than .05. In the other general civil category, there is a tendency for the amount awarded as a percentage of the amount sought in the complaint to differ between the six-member jury and the twelve-member jury. When the automobile negligence cases and the other general civil cases are totaled, however, the hypothesis that the six-member jury awards the same proportion of damages sought in the complaint as the twelve-member jury awards cannot be rejected.

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<sup>73</sup> The rate of inflation was computed based on reported Consumer Price Indices for Detroit. See note 35 *supra*.

<sup>74</sup> While there is, no doubt, some inflation component in the amounts awarded, there is some question as to the proper inflation adjustment to make. Because the incidents giving rise to the cases in the samples occurred several years before trial, the inflation adjustment based on the increase in the Consumer Price Index *between the sampling periods* may be suspect. The inflation adjustment performed in Figure 18 is offered as an approximation of the inflation effects on the amount awarded.

FIGURE 18  
AMOUNT AWARDED  
TEST STATISTICS

<i>Without Inflation Adjustment</i>		
Type of Case	Mann-Whitney U Statistic	Probability That the Observed Value of the Mann-Whitney U Statistic Would Occur by Chance if the Distributions Were Identical
AN	1403.0	.09
OGC	563.0	.77
TOTAL	3778.5	.23
<i>After Inflation Adjustment to 1971 Data</i>		
AN	1351.0	.19
OGC	540.0	.57
TOTAL	3647.0	.45

FIGURE 19  
AMOUNT AWARDED AS A PERCENTAGE OF  
THE AMOUNT SOUGHT IN THE COMPLAINT  
TEST STATISTICS

Type of Case	Mann-Whitney U Statistic	Probability That the Observed Value of the Mann-Whitney U Statistic Would Occur by Chance if the Distributions Were Identical
AN	1410.0	.03
OGC	325.5	.12
TOTAL	3133.5	.48

The reason for this unusual result is that there is a statistically significant shift in one direction (higher proportion awarded in six-member jury cases; see Figure 14) for automobile negligence cases and a tendency in the opposite direction (higher proportion awarded in twelve-member jury cases; see Figure 14) for other general civil cases. Thus when the two categories are combined the respective shifts cancel each other and there is, in aggregate, no statistically significant shift.

A possible interpretation of these results is that for each generic type of case, the six-member jury awards a different proportion of the damages sought in the complaint than the twelve-member jury awards. While this interpretation finds some support in the data, the results of this significance test may not be evidence that six-member and twelve-member jury verdicts materially differ.

The amount awarded by a jury is directly related to the value of the plaintiff's cause of action. In Wayne County Circuit Court, the jury is informed of the actual amount of damages sought—the potential value of the case—in the final arguments of counsel; this amount is not recorded in the court records. It is this actual amount sought which the jury considers in awarding damages. The jury is unaware of the amount sought in the complaint, and the complaint itself may not be taken into the deliberation room. Since the relationship between the amount sought stated in the complaint and the actual amount sought at trial is unknown, any inference of a genuine difference in the proportion of damages awarded by the two different-sized juries would be hazardous.

### *C. Interpretation of the Statistical Evidence*

In this study the most important comparison is between twelve-member jury verdicts and six-member jury verdicts. This verdict comparison is performed in the tests of hypotheses three and four, dealing with the prevailing party and the amount awarded, respectively. The test of hypothesis 3 reveals no statistically significant difference between the proportion of verdicts for the plaintiff rendered by the two different-sized juries. While there seems to be a tendency for the six-member jury to award higher demands in automobile negligence cases, the test of hypothesis 4 indicates no statistically significant difference between the amounts awarded by the two different-sized juries. The results of

these tests do not prove that the verdicts of the six-member jury are identical to the verdicts of the twelve-member jury. However, based on the verdicts generated in civil cases in Wayne County Circuit Court, the presumption that the verdicts rendered by the two different-sized juries are identical cannot be statistically refuted.

A finding of no statistically significant difference—that is, the inability to reject a hypothesis—is dependent on both the size of the sample and the critical probability employed. These same two factors determine the power of a significance test. The power of a test is a measure of the ability to detect from evidence that the true situation differs from a hypothetical one.<sup>75</sup> If a test is not powerful enough to detect relatively small differences between the true situation and the hypothetical situation, there is a high probability of accepting a hypothesis when it is in fact false. In interpreting the results of statistical tests, it is essential to be aware of the power of the tests.

For this study, the power of the test of hypothesis 3 is the ability of the test to detect a true difference between the respective proportions of plaintiffs' verdicts rendered by the two different-sized juries. The power of the test is depicted in Figure 20.<sup>76</sup> The graph relates the probability of identifying a true difference between proportions (on the vertical axis) to the size of the true differences (on the horizontal axis). The curve is plotted

<sup>75</sup> For a discussion of the power of statistical tests, see 1 W. HAYS & R. WINKLER, *supra* note 51, at 401-03.

<sup>76</sup> Since the power of a test cannot be calculated until some true situation is specified, the graph in Figure 20 assumes various positive true differences between the two sample proportions. Under the assumptions that

$\bar{P}_{12}$	=	.520	=	true proportion of plaintiffs' verdicts in 12-member jury cases
$n_{12}$	=	123	=	number of 12-member jury verdicts observed
$n_6$	=	210	=	number of 6-member jury verdicts observed
and $\alpha$	=	.05	=	critical probability (two-sided test),

the probability of accepting the hypothesis when it is false,  $\beta$ , may be determined by calculating

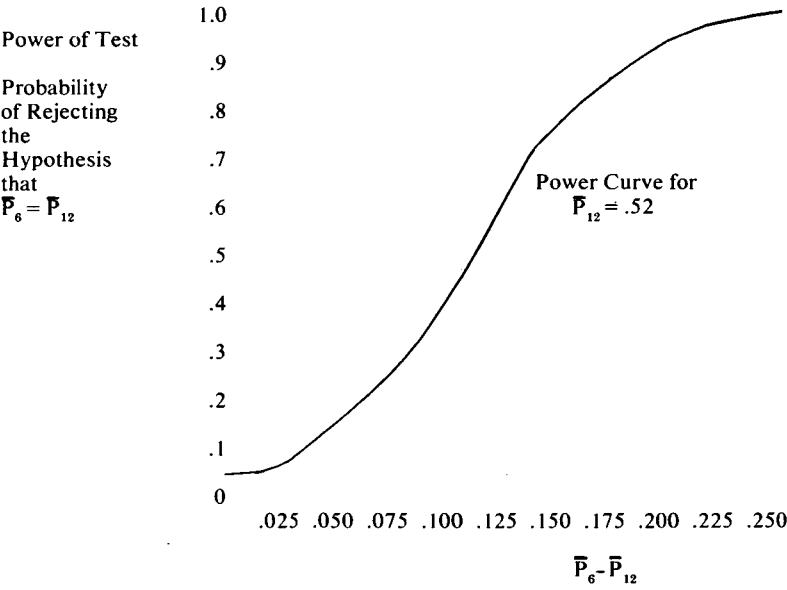
$$z = \frac{M - (\bar{P}_6 - \bar{P}_{12})}{\sigma}$$

where  $M$  = the smallest observed difference between sample proportions which would trigger rejection of the hypothesis that  $\bar{P}_{12} = \bar{P}_6$   
 $\bar{P}_6 - \bar{P}_{12}$  = difference between the true proportion of plaintiffs' verdicts in 6-member jury cases and the true proportion of plaintiffs' verdicts in 12-member jury cases  
 and  $\sigma$  = the standard deviation of the sampling distribution of  $(\bar{P}_6 - \bar{P}_{12})$ .

Using the calculated value of  $z$  and a probability table for a standard normal distribution, the probability of accepting the hypothesis when it is false,  $\beta$ , may be determined. The power of the test is equal to  $1 - \beta$ .

FIGURE 20

GRAPH OF THE POWER OF  
THE TEST OF HYPOTHESIS 3



where  $\bar{P}_6$  = true proportion of plaintiffs' verdicts in 6-member jury cases

$\bar{P}_{12}$  = true proportion of plaintiffs' verdicts in 12-member jury cases

- and
- critical probability = .05
  - number of 12-member jury verdicts observed = 123
  - number of 6-member jury verdicts observed = 210



assuming the same critical probability and sample sizes which characterized the test of hypothesis 3.

The graph in Figure 20 shows that for true differences between the proportions of plaintiffs' verdicts of less than 5 percent, the hypothesis test is extremely likely to fail to detect the difference. For example, given random samples of the sizes available in this study, if the true proportion of plaintiffs' verdicts in twelve-member jury cases were .52 and the true proportion of plaintiffs' verdicts in six-member jury cases were .57, the significance testing technique would detect the .05 difference in only 16 percent of the possible samples. Thus the significance tests employed in this study are very weak and could easily fail to disclose small true differences between six-member jury verdicts and twelve-member jury verdicts.

In order to detect small differences between the verdicts of the two different-sized juries, the power of the statistical tests would have to be improved by increasing the sample size. By making plausible assumptions fixing the probability of making an error at some small value, it is possible to calculate the sample size necessary to achieve highly reliable statistical results. If the critical probability were set at .05 and the investigator desired to perform a hypothesis test which would detect a .05 difference in proportion of verdicts for plaintiff in at least 95 percent of the samples, a random sample of 5,200 jury verdicts would be required—2,600 twelve-member jury verdicts and 2,600 six-member jury verdicts.<sup>77</sup> A random sample of this size would provide more conclusive evidence of whether six-member jury verdicts differ from twelve-member jury verdicts.

#### IV. CONCLUSION

The jury verdicts examined in this study were rendered in civil cases and were received when five-sixths of the jurors had reached agreement. Therefore the results of this inquiry may not be capable of being generalized to verdicts in criminal cases or to unanimous verdicts.

This study has uncovered no statistically significant differences between six-member and twelve-member jury verdicts in civil cases in Wayne County Circuit Court. Because the number of

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<sup>77</sup> The mathematical formulas used to calculate this sample size are the same as those employed in note 76 *supra*. In note 76, the sample size was assumed and the power of the test was calculated. To determine a favorable sample size, the desired power of the test must be assumed; the sample size necessary to achieve that power may then be calculated.

cases sampled is relatively small, these findings cannot be considered completely definitive. Nevertheless, this study provides empirical statistical evidence which tends to support Justice White's statement in *Williams v. Florida* that "there is no discernible difference between the results reached by the two different-sized juries."<sup>78</sup>

—*Lawrence R. Mills*

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<sup>78</sup> 399 U.S. at 101.